DOCUMENT RESUME

ED 393 207 EA 027 472

TITLE	Learning beyond Schooling: New Forms of Supply and New Demands. OECD Documents.
INSTITUTION	Organisation for Economic Cooperation and Development, Paris (France).
REPORT NO	ISBN-92-64-14529-X
PUB DATE	95
NOTE	58p.
AVAILABLE FROM	Head of Publications Service, OECD, 2 rue Andre-Pascal, 75775 PARIS CEDEX 16, France ($13).
PUB TYPE	Collected Works - Conference Proceedings (021) -- Reports - Evaluative/Feasibility (142) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Access to Education; Distance Education; *Educational Change; *Educational Demand; Educational Opportunities; *Educational Supply; *Educational Technology; Educational Trends; Elementary Secondary Education; Foreign Countries; *Learning Strategies; Policy Formation; Supply and Demand

ABSTRACT

Knowledge and learning are becoming increasingly central to work and everyday life at the close of the 20th century. This document examines the potential for creating a new match between the demand for and the supply of new forms of learning. It draws on a range of recent Centre for Educational Research and Innovation (CERI) work and summarizes the perspectives that emerged from the CERI conference, "Learning Beyond Schooling: New Forms of Supply and New Demands," held in Paris in December 1994. Chapter 1 looks at new demands for learning and new forms of supply, considering how they might be better matched. Chapter 2 looks more specifically at aspects of the new "learning infrastructure" that might enhance learning opportunities. The third chapter examines a number of policy issues, including the question of how responsibilities should be divided between public and private actors. The report concludes that it is not inevitable that new learning opportunities develop in ways that best match demand. Governments in partnership, particularly with the private sector, will need to play an important role in creating a sound infrastructure for learning, although they may not always be directly involved as suppliers. Conclusions for policymakers to consider include: (1) learning in the 21st century will become an essential part of everyday human activity; (2) access to learning in the 21st century must strive for universality; (3) learning technologies in the 21st century must actively support respond flexibly to learner needs; (4) learning suppliers in the 21st century must adapt their ways; (5) governments in the 21st century must actively support the learning infrastructure, but not expect to control the agenda; and (6) learning in the 21st century will need to be a collaborative enterprise. Appendices contain descriptions of three CERI studies and the conference program. (LMI)

OECD DOCUMENTS

ED 393 207

Learning Beyond Schooling

New Forms of Supply and New Demands

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY
J. R. West
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

EA 027 472

OECD DOCUMENTS

CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION

Learning Beyond Schooling

New Forms of Supply and New Demands

PUBLISHER'S NOTE
The following texts are published in their original form to permit faster distribution at a lower cost.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973) and Mexico (18th May 1994). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

The Centre for Educational Research and Innovation was created in June 1968 by the Council of the Organisation for Economic Co-operation and Development and all Member countries of the OECD are participants.

The main objectives of the Centre are as follows:

- *to promote and support the development of research activities in education and undertake such research activities where appropriate;*
- *to promote and support pilot experiments with a view to introducing and testing innovations in the educational system;*
- *to promote the development of co-operation between Member countries in the field of educational research and innovation.*

The Centre functions within the Organisation for Economic Co-operation and Development in accordance with the decisions of the Council of the Organisation, under the authority of the Secretary-General. It is supervised by a Governing Board composed of one national expert in its field of competence from each of the countries participating in its programme of work.

Publié en français sous le titre :
APPRENDRE AU-DELA DE L'ECOLE
NOUVELLES OFFRES D'ENSEIGNEMENT ET NOUVELLES DEMANDES DE FORMATION

© OECD 1995
Applications for permission to reproduce or translate all or part of this publication should be made to:
Head of Publications Service, OECD
2, rue André-Pascal, 75775 PARIS CEDEX 16, France.

FOREWORD

Knowledge and learning are becoming increasingly central to work and everyday life at the close of the 20th century. Both the desire and the opportunity exist to make conscious learning a pervasive part of every person's life and therefore of the whole society.

It is possible to identify the growth, both in demand for new forms of learning and for new ways of providing opportunities to learn. Demand comes from society and employers alike who see the economic importance of a better use of skills. Individuals also see the importance of learning in terms both of their economic opportunities and of their ability to function well as consumers and citizens. New supply possibilities come not least from advances in information and communications technology, which can empower students to take control of their own learning. These trends make it possible for learning to break free from the confines of nationally-defined institutional provision, and to respond to desires for learning in the local, national and international contexts.

This volume examines the potential for creating a new match between supply and demand. It draws on a range of recent CERI (Centre for Educational Research and Innovation) work, and summarises the perspectives that emerged from the CERI conference on "Learning Beyond Schooling: New Forms of Supply and New Demands", held in Paris in December 1994. It concludes that it is not inevitable that new learning opportunities develop in ways that best match demand. Governments in partnership, particularly with the private sector, will need to play an important role in creating a sound infrastructure for learning, even though they may not always be directly involved as suppliers.

This report has been prepared in close co-operation with the Secretariat by Donald Hirsch, United Kingdom, in his capacity of general rapporteur of the conference. The views expressed do not commit either the Organisation or the national authorities concerned. It is published on the responsibility of the Secretary-General of the OECD.

Table of Contents

Introduction: **Context of the conference** 7

Chapter 1: **New demands for learning and new forms of supply** 11

Background discussion 11
- The demand side 11
- The supply side 13
- Demand and supply: the dynamic 14

Perspectives 1: What is learning, Who learns, and how? 15
- Moving away from a supplier's definition 15
- Are different teaching and learning strategies needed for adults? 16
- Learning in the consumer society 17
- Involving all groups 18

Chapter 2: **Towards a new infrastructure for learning** 21

Background discussion 21
- An infrastructure for open learning 22
- An infrastructure for effective learning 22
- An infrastructure for learning from anywhere 23

Perspectives 2: Harnessing new technologies to create a new learning environment 25
- The ad hoc development of technology-aided learning 25
- Distance education: jumping on the bandwagon 27
- Integrated learning systems and the importance of "educational infrastructure" 28
- Can new technologies help contain educational costs? 29
- Resource-based learning and the autonomous learner 31
- Qualifications, jobs and the recognition of learning 32

Perspectives 3: Learning beyond the Nation-State 33
- Culture as a barrier or an incentive to internationalisation? 33
- What kinds of supranational infrastructure? 34

Chapter 3: **Policy implications and options** 37

Background discussion 37

Perspectives 4: Public-sector responsibilities 40
- Governments as highway-builders or traffic-planners? 40
- Resource allocation: Who decides? 42

Conclusions: **Principles for learning in the 21st century** 43

Annex 1: Learning beyond schooling -- Three CERI approaches 46
Annex 2: Programme of the conference 49

Notes 55

Introduction

CONTEXT OF THE CONFERENCE

Advanced democracies at the close of the 20th century are struggling to make knowledge and learning a central aspect of social and economic activity. A century ago, education was developing into an essential part of initiation into social and economic life through the introduction of universal schooling. Today's ideal, at best partially realised, is to make learning a lifelong activity, in which schooling becomes better co-ordinated than in the past with other forms of learning that take place beyond the school's walls. The desire to extend learning beyond schooling on an unprecedented scale arises from a combination of new pressures and new opportunities. The most important development is the central role now played by knowledge and information in every aspect of social and economic life, under the influence of new computer and communications technologies. These technologies create an enormous potential for an increase in knowledge and its applications, through intelligent use of the information to which they offer access. The growing economic and social importance of knowledge simultaneously increases the demand for learning and creates new possibilities in terms of how it might take place. On the "demand" side, it underlines the importance of lifelong learning for all citizens and workers, enabling them to function in a modern environment and to adapt to change. Demand comes both from individuals who see that learning brings opportunities and from employers who are aware of the importance of certain skills in a knowledge-based economy. The OECD Jobs Study[1] approved by ministers in June 1994 stressed the economic demand for learning as a key ingredient in job creation.

At the same time on the "supply" side, the information age makes knowledge accessible to more learners, beyond traditional boundaries of age, time and place. Relationships between teachers and learners as well as among learners themselves can be transformed. Technology offers the opportunity to integrate learning more effectively into everyday life. Yet the existence of technology does not guarantee its intelligent use, and a central policy question is how the use of new learning tools can best be matched to the new demand.

Policy strategies to promote learning beyond schooling are less straightforward than was the introduction of publicly-financed school systems a century ago. The pattern of learning at this level is beyond the direct control of governments, not just because they lack the resources to finance education and training on a lifelong basis, but because learning patterns are determined by a complex array of influences ranging from company attitudes to in-service training to local cultural attitudes towards informal study. Rather than being determined by planned institutional "provision", education and training activity is influenced

by the interplay between supply and demand, with individuals responding to services offered at local, national or international level.

Recent work at the OECD has identified several potential growth areas of education and training that extend beyond the confines of traditional initial education. Three areas of CERI work in particular have addressed this theme, investigating:

-- *Lifelong learning:* the various manifestations of new demand for learning at different points in the life-cycle and their relationship to the supply of education and training opportunities -ranging from formal study in institutions of continuing and higher education, to less formal modes in community and workplace settings.

-- *Higher education in a new international setting:* the ways in which learning programmes extend across borders, and thus help create new learning possibilities beyond the traditional bounds of national education systems.

-- *The impact of information and communication technologies on post-secondary education:* new technological possibilities, their applications in terms of meeting new demands and their implications for institutional development.

These studies, outlined in Annex 1, have not only collected evidence on trends, but also seek to identify appropriate public policy responses in areas of rapid change. Governments need to think hard about their role in the move towards a more heterogeneous and open framework for organised learning. Education ministries, which are structured around existing programmes of public, institutional provision, often find it hard to engage systematically in this debate, which cuts across a range of responsibilities. A wide-ranging dialogue is needed about how to respond to change, involving local decision-makers and the private sector as well as central government.

At the conference on "Learning Beyond Schooling -- New Forms of Supply and New Demands", held at OECD Paris headquarters in December 1994, CERI started to create such a broad international dialogue. As well as senior delegates from education and training ministries in 24 countries, there was participation from employers and trade unions, from those engaged in creating a new technological infrastructure in the public and private sectors, and from individuals involved in regional and international bodies as well as national ones. This conference, moreover, used the very technologies that it was discussing to widen the debate, holding an innovative videoconference that simultaneously linked five sites on four continents (Canberra, Helsinki, Stockholm, Tokyo and Toronto) with Paris. This allowed busy participants to join the discussion without traveling: they included Finland's Minister of Education, the Director of the National Institute of Multimedia Education in Tokyo and the Deputy Secretary of Australia's Federal Department of Employment, Education and Training.

Pulling together such a wide audience to discuss such a broad, interconnected set of trends was a risky business. At worst, participants could have failed to think beyond their own narrow concerns, producing a disconnected dialogue. However, it turned out that not only did interests overlap to a remarkable degree, but there was a clear consensus that

technology combined with demand for new forms of learning created an urgent challenge. And there was a need to think strategically about how to confront it.

This volume aims to present the issue of demand for and supply of learning in today's changing societies to a larger audience. It brings together a variety of perspectives, some of which arose at the conference itself, and some which were drawn from the preceding CERI work including conference documentation. Although the multiplicity of voices that contributed to this dialogue cannot be represented by a single line of analysis and recommendations, certain clear views emerged. There is widespread agreement over at least some of the key issues that need to be resolved if the potential of new technologies is to be translated into high-quality opportunities for learners.

The following chapters combine a "background discussion" drawn mainly from the work carried out by CERI in advance of the conference[2] with a series of "perspectives": particular issues arising in discussions at the conference and in the papers that supported it. These sections are also introduced by illustrative comments made by conference participants, in the form of quotes. Since these were spontaneous remarks, included in the report to give a flavour of the conference discussion, rather than representing the views of particular participants, they are not attributed to individuals.

Each chapter addresses a series of discussions under an overarching theme. Chapter 1 looks at new demands for learning and new forms of supply, considering how they might be better matched. This raises a series of issues about the nature of learning and about how groups who have been denied opportunities in the past might have better prospects in the future. Chapter 2 looks more specifically at aspects of the new "learning infrastructure" that might contribute to this enhancement of opportunities, including the issue of the appropriate geographical level -- local, regional and international as well as national -- at which this infrastructure might be developed. Chapter 3 looks at a number of policy issues that arise, in particular the question of how responsibilities should be divided between public and private actors.

Chapter 1

NEW DEMANDS FOR LEARNING AND NEW FORMS OF SUPPLY

This chapter reviews how both the demand for learning and various aspects of its supply are diversifying. Following a background discussion of the main trends, a series of perspectives explore the nature of learning, the characteristics of learners and the ways in which different groups learn.

BACKGROUND DISCUSSION

Although learning is not a commodity that can be mechanically bought and sold in a marketplace, the metaphor of demand and supply is a potentially useful one in relation to services that have learning as their main objective. The desire and propensity of individuals to engage in various learning activities can be defined as "demand". The provision of education and training programmes, courses, packages and other products/activities that aid conscious learning may be represented as "supply".

Such concepts can be useful because rapid change in the nature both of supply and of demand creates the risk that there will not be a good match between them. On the one hand provision of education and training cannot on its own create willing and effective participation; on the other, potential or actual demand for new kinds of provision may go unmet. There is a particular need to avoid an excessively "supply-led" concept of provision -- courses and opportunities need to be sensitive to the needs and desires of learners, and not be based simply on new technological possibilities, the ideas of suppliers or their institutional interests.

The demand side

Greater importance than ever is being attached to education and training, both by individuals and by society as a whole. A number of developments, in particular recent structural changes in OECD economies, have precipitated a process whereby learning has come to be seen as important to the lives and employment prospects of all citizens, not just to an élite. The rapid reduction in the number of unskilled jobs in manufacturing industries from the 1980s onwards was the most obvious event that influenced this transition. But more generally, it has come to be realised that structural changes associated with new technologies imply new roles for citizens and workers that require thinking skills and a use of literacy in new and unfamiliar situations. Employers frequently express a desire for a more skilled

workforce, although the degree to which they translate their demand for skills into appropriate signals, that cause individuals to demand skills for themselves, is variable.

Thus the learning needs expressed by society or the skill requirements of industry are not automatically translated into *manifest* demand from individuals. Workers, for example, are not lining up to join literacy courses because they realise that new kinds of literacy skills will be needed in 21st century workplaces. Moreover, a large proportion of increased social demand for learning is channeled into greater participation in initial higher education, despite an evident need for a balance between learning in youth and learning later on in life. A variety of factors influence participation in continuing education and training, including the existence of financial incentives, the context in which learning opportunities are presented and the constraints of time and place. Much demand thus remains unexpressed. But a high degree of *latent* demand for learning may be characterised by diversity in at least three senses:

-- A diverse client group...

Education and training are potentially of interest to all individuals at all stages of their lives. This marks a significant change from the situation where learning beyond compulsory schooling was considered only by the few. An unemployed person joining a literacy course, a manual worker being trained to use a computer or a retired person at a "university of the third age" studying for the first time for fifty years, each have their own particular needs that will have to be met if a return to learning is to be fruitful for them.

-- ...with diverse objectives...

In initial schooling, the objectives of learning are considered to be roughly the same for all children: an initiation into society and the acquisition of essential skills and knowledge. In post-secondary and adult education and training, individual learners formulate a much greater range of personal objectives -- whether linked to character or intellectual development or to specific work-related competences.

-- ...in diverse situations.

Full-time enrolment in a programme based at an academic institution suits some learners, but is inappropriate to others. For people in full- or part-time jobs and with family responsibilities, there are obvious time constraints. For people physically remote from appropriate institutions, or physically handicapped, there are problems of location -- a possibility that increases as the diversity of people's learning needs makes provision more specialised. Cultural attitudes may further distance some potential students from traditional learning institutions. Moreover there is a pedagogical as well as a practical case for some learning to be situated in the context in which it will be applied, rather than removed to the more abstract

environment of an educational institution. Learning is often more effective when related directly to the context of its eventual application.

Direct quantification of the level of such diversified demand is difficult, as participation depends on the nature of available opportunities. However, two observations about participation in certain institutional settings serve to illustrate the potential for fundamental change in learning patterns. First, in some countries (e.g. the United Kingdom), a majority of enrolments in higher education establishments are now accounted for by "mature" students who have had some break from continuous full-time education after school. Second, in some countries (e.g. Sweden) it is estimated that nearly half of all adults engage in some form of organised learning in any given year. There is no reason to suppose that potential demand differs dramatically from one OECD country to another. The evidence is that where barriers to adult learning are broken down, demand manifests itself in sometimes unforeseen quantities.

The supply side

This diversity of demand clearly needs to be matched by a diversity of supply, which is unlikely to be provided by any one type of institution, or even necessarily by a single nationally-supervised "system" of education and training. The supply of educational services is starting to look less like a traditional public service and more like an industry -- potentially with international as well as domestic "outlets".

There are a number of ways in which the nature of supply is changing to remove traditional barriers to learning in response to potential demand from new client groups. In particular:

-- *The institutional framework is changing*, in several ways. Greater variety is developing, both within and between post-secondary institutions, in terms of delivery modes and target client groups. Many institutions are becoming more open to part-time students, offer a greater range of courses of varied duration, and make efforts to combine on-campus with off-campus instruction either through distance learning or partnerships with work- and community-based organisations. At the same time, general-purpose post-secondary institutions are facing greater competition from learning modes with no links to campus-based organisations. A company, for example, may compare the value of sending a worker on a college-based course with that of in-house training or the use of a specialised training consultant. Institutions are still in the process of finding an appropriate niche in this competitive market.

-- *The technological possibilities are changing*. Information "superhighways" ultimately offer the potential for low-cost "real-time" interactive communication between any group of people anywhere in the world in video, audio and written mode. While this situation is still some way off, even today's technology offers a major change from a world in which the only media for learning away from the classroom were written materials. Interactive computer communications that may

one day become as commonplace as the telephone are already being pioneered by particular groups of users on dedicated networks. Technology most visibly creates the possibility of more active communication between teachers and students, and among students, who are physically detached from each other. But the more momentous impact of information technology on education in the long-term will not be the conquest of distance, but the transformation of the relationship between learners, teachers and learning equipment. As software applications become more sophisticated, the interaction between learners and technology could put students more decisively in control of their own learning; teachers will not become less important but will have to adapt to a new triangular relationship with learners and technology. The supply of technology-aided learning packages will moreover become more flexible, with greater potential for the export of successful products on a worldwide basis.

-- *A new financial framework is evolving.* Who pays for education and training beyond schooling? The expansion of higher education from the 1950s onwards in North America and from the 1960s in Europe was supported by a public-sector commitment to pay for it. But present and future development of post-secondary education and training is being considered in the context of shared funding responsibilities. Employers and individuals who benefit from an investment in learning are expected to make greater financial contributions. Joint investment can enhance the effectiveness of learning by giving several partners a stake in the outcome. But there is always a risk that financial barriers will deter participation, and hence lead to unmet demand. The optimal division of funding responsibilities thus remains an important point for discussion.

But regardless of who ultimately pays, the structure of funding is changing in an important way. An increasing amount of public funding is being diverted via students according to their choices rather than being allocated directly via institutions to supply a planned level of inputs. This has the obvious advantage of ensuring that supply is sensitive to demand. Its greatest potential drawback is that by destabilising income flows it makes it difficult for institutions to maintain high-quality provision. But it seems inevitable that post-secondary institutions, operating in a competitive and diverse market for educational services, will have increasingly to adapt to the fluctuations of demand, rather than expect stable funding based on their longer-term contribution as institutions.

Demand and supply: the dynamic

Some governments are starting limited simulations of the commercial dynamic of demand and supply, by basing funding decisions on student choices. This does not create perfect markets however, since central decisions are still made about whom to fund, which kinds of course are eligible, and most importantly the price or value of each enrolment. Where institutions are given autonomy to charge variable fees, there may be more scope for supply to expand to meet demand; but any government or institution committed to equal access still needs to make decisions about how much subsidy to give to those unable to afford the commercial rate for courses, and to which courses they should be entitled.

Perhaps a more interesting aspect of the demand-supply dynamic is the interactive relationship between the new kinds of demand and the new forms of supply discussed above. "Latent" demand for post-secondary education among undereducated groups is invisible until there are "access" courses helping them to enter education by non-traditional routes. Moreover, the quality and effectiveness of any course depends on the attitudes and behaviour of its "consumers": it is impossible, for example, to force training on a group that is not itself committed to clear learning objectives. In other words, unlike the commercial market the educational product's value depends on effective collaboration between consumers and producers, and hence on a good *qualitative* match between demand and supply.

The important policy implication of this dynamic is that the increased demand for learning cannot be provided by simply raising the level of "provision": it depends on a dynamic which governments may influence but cannot control. The powerful force created by new technologies is starting to create an explosion of learning activity which will be shaped by emerging relationships between teachers and learners, not by government decision-making. At best, policymakers might hope to steer this activity in constructive directions.

PERSPECTIVES 1: WHAT IS LEARNING, WHO LEARNS, AND HOW?

Moving away from a supplier's definition

"We are too ready to confuse education with learning".
(Conference participant)

The concept of "supply" and "demand", although useful in analysing provision of educational services, can be criticised as a description of learning itself. Learning is not just about attending courses, or even about using supplied "courseware". There is increasing emphasis on so-called "self-directed" or "autonomous" learning, in which learners construct their own learning experiences rather than following a pre-packaged programme.

Perhaps policymakers have tended to neglect learning activity unconnected to identifiable educational "supply", judging with some justification that governments have little or no role in determining how many books people read, acquire information from friends or colleagues or learn in other "informal" ways. Yet the dividing line between "supplied" education and learning designed by the learners themselves is becoming more blurred, as technologies can allow learners to chart their own course through well-designed study packages proliferate.

Policymakers are now starting to realise the importance of considering a wide range of learning activities if they are to devise effective strategies for creating "learning societies". One powerful reason for doing so is that a large number of adults who would not consider participating in something called "education" are nevertheless willing to learn under different labels. One example is the popularity of "How to..." and "Teach yourself..." books and an increasing number of videos on subjects ranging from gardening to memory skills:

The United States Library of Congress index lists over 12,000 titles of books and videos beginning with the words "How to...". They cover every conceivable subject, starting (alphabetically) with the eminently practical:

How to Abandon Ship ...

... and finishing with the transcendental:

How to Zig in a Zagging World.

Although such books and videos may often themselves be of value as learning tools, they also demonstrate the enormous potential audience for more sophisticated forms of learning.

Are different teaching and learning strategies needed for adults?

"Adults like to control their learning more than children do".
"Adults and children differ only in their motivation, not in their strategies".
(Conference participants)

Many preconceptions about education, teaching and learning are being challenged by the new characterisation of learning as a lifelong process. Certainly the concept of instruction to a "captive" set of children, obliged to go to school, cannot apply to adults who learn on a purely voluntary basis. Adults often to come to learning with a relatively precise set of objectives, and with a prior commitment to making learning a productive experience. The double implication is that they can potentially play a large part in devising their own learning experiences and that the "supply" of teaching and courseware needs to be designed as much in relation to what learners are demanding as to the preconceptions of "suppliers". A further important aspect of adult learning is that a more obvious demand exists to relate it to the "real world", in which learners have ample prior experience, rather than confining it to the abstract or theoretical.

However, none of these characteristics need cause an absolute distinction between the learning strategies that work for adults and for children. Indeed, while adults are more obviously able to take initiative and play an active role in planning their own learning, there is no reason why this should not be an objective for children as well. To the extent that learning is more effective when applied to real-life situations, there is also no reason why children should not engage in similar methods to those employed by adults. In order for the learning strategies of both children and adults to change, there clearly needs to be an appropriate change in teaching strategies. So far, it has too often been the case that traditional methods for teaching children, that do little to encourage initiative and "active" learning, have been duplicated in teaching strategies for adults -- rather than the converse.

Thus the most radical implication of lifelong learning could be the reforms that it implies for school pedagogies. If children grow up considering knowledge to be something

that is merely handed down by teachers, for reasons that are somewhat obscure to the student, they are far less likely to continue learning in adult life than if learning is seen as a voluntary voyage of discovery.

This is not to say that adults can ever be identical to children as learners. In particular:

-- Their motives may relate more directly to such tangible factors as getting a job or a promotion, whereas for children the eventual benefits will in many cases be a longer way off;

-- The time constraints on adults are very different from those on children, and this potentially has a profound effect on learning styles. There is as yet only limited empirical understanding of the relationships between learning and time, and this issue is a strong candidate for research and attention in the future.

-- For children, school serves an initiation function that does not exist for adult learners. The fact that it is an introduction into adult society gives the teacher a particular authority as an adult, that limits the degree to which a child can independently define learning objectives.

Learning in the consumer society

"All learning should be fun!"
(Conference participant)

The strengthening economic rationale for learning societies has caused a sometimes arbitrary distinction to be drawn between learning that relates to employment or economic activity, and that which does not. One way of describing this distinction is in terms of learning for "investment" and learning for "consumption": on the one hand, learning as an instrument for enhancing the economic capacity of an individual or a whole society, on the other as a direct means of enhancing quality of life -- part of the process of enjoying the fruits of economic production.

This distinction has some conceptual value: the Japanese for example have used it to demonstrate that unlike in many other OECD countries, one of the present preoccupations with lifelong learning in Japan does not necessarily derive from a concern with enhancing productivity, but is rather intended to encourage the population to focus less on purely economic objectives. However, there are two major problems with such a stark distinction.

First, people often learn for a multiplicity of reasons, and the future economic value of learning can be uncertain. Learning that is undertaken to build certain character traits such as self-confidence, or to improve skills with multiple uses such as computer literacy and foreign language competence, may have value both in the economic and in the non-economic spheres.

More fundamentally, all learning that has any future use, economic or otherwise, can be seen as an investment, while all learning that is undertaken voluntarily in a way that will benefit the learner is in one sense consumption. Learners may start to conceive of themselves more as consumers than in the past, as tools for self-directed learning proliferate, and funding for institutions starts to be linked more directly to enrolment levels or "consumer choices". This would represent a major shift in perception for those who have seen learning as a requirement imposed on them.

The growing prominence of consumer decisions in determining learning patterns makes it crucial that learning should be not only useful but fulfilling -- enjoyable in itself:

"The interest of (Japanese) people in lifelong learning is oriented more toward leisure-oriented and culture/sport oriented activities... which have become almost a synonym of 'lifelong learning' itself, and learning activities for economic purposes are quite often unconsciously excluded from the scope of lifelong learning. Although 'fun and pleasure of learning' have been emphasised, culture/sport-oriented and leisure-oriented learning activities are not considered as just for fun and pleasure in Japan but as valuable practices for character building, the quality of life and self-fulfillment".
(Kaoru Okamoto, Japan)[3]

Adults who have grown up with a formal system of education designed not to be fun -- and particularly those who have been failed by that system -- are unlikely to return voluntarily to an activity that they consider at worst as a punishment, at best as a disagreeable form of medicine. Naturally, it would be worrying if the desire to make learning more fun also decreased its quality: there is no point in designing colourful and addictive computer games with little educational content in order to enhance "participations" however defined. But worthwhile learning can also be made enjoyable, and there is evidence to suggest that adults are relatively good at recognising educational quality and at making appropriate choices. There is also an obvious role for public agencies in guiding them towards such quality choices.

Involving all groups

"How can we assure that the new generation of learning technologies do not just benefit the better-educated and better-motivated?"
(Conference participant)

All surveys of adult participation in education and training show that those with the greatest initial education are most likely to participate in organised learning activities later in life. Yet it is educationally disadvantaged groups who represent potentially the greatest source of demand for new kinds of learning. For example:

-- The long-term unemployed need to get involved in learning that improves their basic skills, confidence and other personal skills in order to enhance their employability;

-- Unskilled workers in job categories that are in decline may need retraining in both general and specific skills;

-- Women returning to work after a career break may benefit from retraining and personal development that helps them to progress in new directions;

-- Adults with low functional literacy need reading skills that can make them more effective as workers, as consumers, and as citizens in an information-oriented society;

-- Recent immigrants may need to acquire a combination of language, literacy and cultural competencies in order to operate effectively in their host country;

-- Disabled people are traditionally excluded from participation in learning and other social activities by environments that favour the able-bodied;

-- Prisoners, sailors, residents of remote areas and others unable to attend regular courses need new forms of access to give them equal opportunities to learn.

An optimistic scenario is that learning for these groups will become increasingly accessible with the proliferation of resources that put learners more in control. A pessimistic scenario is that, like previous models, new learning forms will be of disproportionate benefit to those who have the resources and motivation to access them. Certainly some early technological prototypes -- such as the Internet, a prototype of the "information superhighway" and portable micro-computers -- are used most effectively for learning purposes by privileged groups such as academics. As communications and information technology become easier to use, it is not inevitable that they will democratise access to learning. A proliferation of information will only be useful to those who know where to look to meet their learning needs.

Thus the infrastructure of learning is important, not just in the technological sense, but in terms of how to organise learning resources, and how to provide users with good maps that point them to high-quality and pertinent learning experiences. The nature of this infrastructure, both "hard" and "soft", will be the key to the learning options open to the new "learning consumers", and is the subject of the next chapter.

Chapter 2

TOWARDS A NEW INFRASTRUCTURE FOR LEARNING

The supply of learning opportunities is becoming more open and accessible as new technologies become available, as suppliers restructure the types of learning on offer, and as supply breaks free of national boundaries. This chapter reviews how the infrastructure of learning might develop, and offers a range of perspectives on how new technologies are being harnessed and on the trend towards internationalisation.

BACKGROUND DISCUSSION

It is clear that the possibility now exists for a new learning environment to emerge in which high-quality education and training becomes more accessible to a wider range of users. But it is equally clear that the creation of such an environment is not made inevitable by technological development, but also depends on changes in institutional cultures and the intelligent application of communication technology for educational purposes.

Is it possible to create an infrastructure which removes as many barriers as possible to learning beyond schooling? In attempting to answer this question, it is necessary to consider both what kind of infrastructure is needed and what organisational changes will be necessary to create it. The new infrastructure must:

- Create a more open set of institutions which permit learning to take place at the convenience of the learner;

- Create new learning strategies that make learning more effective, making it possible to serve purposes and client groups that have not hitherto been catered for;

- Facilitate learning in different places according to the needs of the learner, and the effective integration of activities inside and outside educational institutions through the use of dedicated networks -- and eventually a universal, more general link-up on the "information superhighway".

An infrastructure for open learning

The structure of educational institutions has often served to restrict access to learning rather than to promote it for all. Two particularly common forms of restrictiveness have been selective criteria for participation and rigid timetabling that is inconvenient to many potential learners with other time constraints.

Higher education in particular has traditionally been selective, setting certain requirements for participation that aim to maintain a paradigm of academic quality. A more inclusive policy for admission to institutions need not compromise academic quality as long as it is combined with diversification; entry requirements need only be applied for courses where a prior level of achievement is necessary in order for students to benefit. A genuinely open institution would attempt to start by identifying student needs, and design courses accordingly, rather than starting with courses and looking for students to fit them. One possible implication for higher education is that most or all courses might include at least some vocational components; one way of delivering these is in modular form, aided by new technologies which make it easier to deliver particular learning packages more widely.

A more pragmatic change in learning infrastructure would address some of the practical constraints that close off learning opportunities -- in particular that of time. Institutions have already become more flexible in terms of offering short courses, part-time courses and evening courses to students who do not have the opportunity to pursue a full-length, full-time course of study. But technology has multiplied the potential for restructuring the time devoted to learning. By increasing the scope for learning outside real-time contact with a teacher, it has given the learner more control over time. Whether recording a video of a television, lecture, using interactive teaching software or communicating outside real time with the teacher (for example through voice-mail), a student can learn in a variety of ways without necessarily attending real-time lessons. Such lessons continue to form an important part of many courses, but they may become merely the timetabled core of a variety of other activities.

An open learning infrastructure should ideally allow students to structure learning more flexibly not just over the day, week and year, but also over the life-cycle. Where institutions are open to all, and allow time to be structured at the convenience of the student, it becomes easier for citizens to envisage regular returns to learning throughout their lives. But equal access to learning for people of different ages is not just a matter of admissions policy and time flexibility; it is also one of finance. Governments may not yet be prepared to give equal subsidy to students of all ages -- their actions indicate not -- but this is an issue that needs to be addressed (see Chapter 3: Policy implications and options).

An infrastructure for effective learning

Strategies that equate mere provision of education and training courses with learning are vulnerable for two reasons. First, because beyond compulsory schooling attendance is voluntary, and learners will not attend courses that do not meet their specific learning objectives. Second, because mere attendance does not guarantee effective learning. There is

evidence to suggest that effective learning strategies for adults deviate considerably from the traditional academic model of the transmission of knowledge from lecturer to student. Explorative and self-directed learning is particularly desirable for those with a clear idea of their learning objectives and needs.

As much of CERI's work on new educational technologies has indicated, the information revolution potentially creates a new relationship between teachers, learners and technology, in which the teacher becomes more of a facilitator than a "master" of learning. However, this potential does not arise automatically from the presence of computer hardware or even software: it involves a reconceptualisation of the position of the teacher in the educative process. A major process of organisational change is necessary if teachers and the structures they work within are to adapt to this new role. It is not enough to retrain individual teachers, although that often may be necessary: teachers like other workers need to be life-long learners who adapt to the changing requirements of their profession rather than merely receiving initial training expected to equip them for life. But like with any form of learning, the acquisition of new competences by teachers will not have an impact unless the organisations that they work within become learning organisations, and are willing to encourage changes in the roles taken on by those who work within them. As the report of CERI's working group on face-to-face and distance teaching demonstrates[4], this organisational change has failed to occur in the practices of many conventional institutions of higher education attempting to adopt distance-teaching technologies. The technical infrastructure is changed, but educational and organisational infrastructure remains largely intact.

What would an institution designed for effective learning look like? The most important two characteristics might be that neither the organisation of resources nor the recognition of achievement would be defined through predetermined modes of teaching. So teachers' jobs would not be defined in terms of numbers of "contact hours", but rather in terms of the knowledge and competence to be acquired by particular numbers of students, using a combination of auxiliary resources such as teaching space, computer hardware and communications facilities, which teachers were able to access within defined overall "budgets". Similarly, accreditation would depend on the mastering of skills and knowledge by students regardless of how they had done so, allowing different combinations of classroom learning, private study and interactive technology-assisted learning to result in the same qualification as judged by measures of learning "output".

An infrastructure for learning from anywhere

Networks and "superhighways" linking databases and individual users all over the world have the potential for breaking down the constraints of *place* on access to knowledge and learning. At one level, they could complete a process of the globalisation of knowledge networks. In the first industrial revolution, national differences in the extent of knowledge and know-how in various industrial techniques was an important element determining comparative advantage. Today, knowledge travels more swiftly, yet exchange of information and technology transfer is still far more intense within national boundaries than across them.

The globalisation of markets and of large multinational companies is likely to combine with new communications possibilities to internationalise the spread of knowledge.

But the possibility of overcoming constraints of distance also has profound implications in a far more local context. Most obviously, distance teaching makes it possible for students to be based at home or in the workplace rather than necessarily in educational institutions. More fundamentally, it may be possible to start integrating learning in different settings, allowing elements of study and exchange among students to take place in colleges, homes, workplaces or the community according to their appropriateness for a particular aspect of learning rather than according to administrative convenience.

Some examples of technologies that help to reduce barriers to learning caused by distance, as well as helping to make learning more open in other ways, include[5]:

-- Computerised access to databases from all over the world: an obvious example is the United States Library of Congress catalogue, which can now be read instantly from anywhere on the planet. As more and more information is published electronically, the world will become more like a giant library which can be used from anywhere.

-- A multiplication of possibilities for broadcast transmission of information and instruction created by the proliferation of satellite and cable channels.

-- The development of videoconferencing as a potential method of live communication among teachers and learners. Full-motion video remains prohibitively expensive, but compressed video methods are already widely used as teaching tools within some countries, as well as occasionally at the international level, for example to link students on similar vocational courses in different countries to compare recent developments in a particular occupational field.

-- The development of new digitised media such as CD-ROM, which allow audiovisual images and computerised information to be stored and communicated in the same system, and the consequent integration of technologies. This will eventually allow not just written information but visual images and sounds to be accessed instantly wherever they are needed.

-- The development of electronic networks linking computers on a local, national or international basis. These make possible e-mail communications, bulletin boards and computer conferencing -- all ways of instantly sending information and distributing documents among users in diverse locations. The much-heralded "superhighways" will make such communications universal by expanding the capacity of ordinary telephone lines to carry multi-media information.

Thus ideally the new infrastructure for learning will be open, will permit interactive dialogue rather than depending on didactic instruction and will be unconstrained by place and

time. But technology alone will not produce this result. The behaviour of people and institutions, and the framework of funding and regulation in which learning is set, will determine how the technology is used. This is a matter for careful consideration by policymakers.

PERSPECTIVES 2: HARNESSING NEW TECHNOLOGIES TO CREATE A NEW LEARNING ENVIRONMENT

The ad hoc development of technology-aided learning

"We are asking questions about new technology that are the equivalent of asking the Wright Brothers in 1903 how their new invention fits in with the Virginia railroad system. It doesn't".
(Conference participant)

Visionaries of the 21st century dream of a multi-media future in which everybody has a personal computer linked to an information superhighway that allows direct written, audio, and video communication with everyone else, as well as access to much of the world's knowledge through vast on-line information pools, or rather oceans. The English expression "the world is my oyster" (coined by Shakespeare four centuries ago) may in the coming century become "the world is my terminal".

In the cold reality of the coming decade, there are two problems with this scenario. One is that the development of cheap hardware and on-line information banks will not lead automatically to their best use. The other is that superhighways do not appear overnight, and in the meantime techniques for teaching, learning and the accessing of information adapt to the patchwork of dirt roads that precede them (an example is the Internet network that simulates an information highway but is relatively hard to navigate efficiently except by specialists and enthusiasts). Thus we inevitably attempt to adapt *ad hoc* to new possibilities as they become available, rather than planning for the still-uncertain future. But the rapid pace of change and the time-lags in our response can sometimes mean that our institutional structures are struggling to adapt to yesterday's innovations, just as tomorrow's are being developed.

In this *ad hoc* environment, institutions rarely undergo the thorough structural change that may eventually be necessary to maximise the potential of new technologies. An example is the strategy of conventional post-secondary institutions in exploiting the potential of distance methods. There is a strong trend towards "dual mode" higher education -- on-campus and off-campus methods combined in a single institution.

"France has no open university in the strict sense of the term but is functioning within the dual-mode system which would appear to be the most favourable for developments, since it could help to attain what I have called "tailor-made education", namely a harmonious utilisation of traditional and new modes of teaching". (Maryse Quéré, France)[6]

Not all institutions that take on a distance mode of teaching have used it to its full potential, or integrated a dual-mode perspective into their underlying philosophy, as elaborated by a CERI working group report:

"Universities...that teach largely or solely face-to-face will need to give the closest attention to a broadening of their mission to include distance education as a carefully conceived, properly managed and funded mode of teaching and learning. For publicly funded universities (and other post-secondary institutions) the policies of their governments will be a determining factor. As with all institutions of higher education, they are being courted with the promises of information and communication technology. That, however, is by no means synonymous with distance education. A university's interest in information and communication technology can be confined to research and experimental work on a relatively small scale in one or two departments. A commitment to distance education as an alternative teaching mode requires a new technology for teaching and learning to be conceived, planned and brought into routine operation...

"The focus of attention during the last generation has been on undergraduate programmes, but universities that decide to become dual-mode in the future will be responding at least as much to possibilities associated with graduate and continuing professional education... It seems reasonable to expect that dual-mode approaches will become more attractive to face-to-face universities in the future than they have ever been in the past...

"...Typically, however, face-to-face universities have taken on distance-learning functions almost without noticing. ...Administrative arrangements that began as small, informal undertakings by teachers who were personally committed to providing opportunities for off-campus students may well have persisted long after the pioneering days have passed. Where that is the case it is usually because those who speak for distance education have been less than successful in breaking down institutional resistances to what they are doing. In terms of there inner management, dual-mode institutions are problematic in ways that open universities and face-to-face universities are not.

"It is not simply that the distance mode is of quite recent origin in most dual-mode universities. Markedly different views are held within dual-mode universities as to the educational legitimacy of distance-education approaches for university-level courses. Institutions that have developed for generations (in some cases for centuries) in an ethos that values the unique, personal influence of university teachers on full-time students and the educational benefits of campus life, have to come to terms with the very different approaches to teaching and learning signified by distance-education approaches. The underlying issue during the educational debates of the last quarter of a century was whether distance education, however defined, could do as good a job as face-to-face education. The assumption was that face-to-face teaching was the norm in relation to which distance education had to prove itself...

One of the unsatisfactory features of the situation that has developed over many years is the modish nature of experimentation in the educational uses of communications media. Beginning with radio in the 1930s and television in the 1950s, various technological innovations have been heralded as educational panaceas. Audio graphics, videoconferencing, computer graphics and multimedia linked by servers to hypermedia are the contemporary offerings. Not until use of each new technology has passed beyond the experimental stage have its educational limitations become evident. This is a consequence of starting from the wrong end, looking for educational applications for new technology instead of first being clear of the educational objectives for which suitably prescribed equipment and supporting infrastructures could then be developed and tried out. It is reasonable to suppose that the

BEST COPY AVAILABLE

weaknesses as well as the strengths of particular technologies and mixes of technology would be shown up during such processes of research and development. It is not surprising either that some of the best courseware so far developed for educational purposes is the work of computer companies. They have the commercial impetus to commit themselves to research and development in courseware as well as hardware products with which they expect to increase their market share[7]".

Distance education: jumping on the bandwagon

Examples of distance-only institutions[8] ...

Athabasca University, Canada	13 000 students
University of the Air, Japan	45 000 students
National University of Distance Education, Spain	125 000 students
Open University, United Kingdom	134 000 students

...Examples of countries where a high proportion of institutions offer distance education[8]

Canada	42 of 69 universities
France	23 of 57 universities (with distance teaching)
New Zealand	3 of 7 universities
Sweden	most of the 13 universities and 57 university colleges
United Kingdom	over 50% of universities
United States	almost all universities

BEST COPY AVAILABLE

Integrated learning systems and the importance of "educational infrastructure"

"Non-material investment is much more important than capital investment in the education-technology equation".

"The rate of flow of information is moving from a garden hose to a waterfall".
(Conference participants)

A fundamental change taking place in the development of information technologies is their rapidly growing ability to communicate with each other, both across distance and between modes. For educators and learners, this development offers the opportunity to create an "integrated" learning infrastructure, transforming a series of unconnected teaching and learning aids into a single co-ordinated resource. Whether it is 13 Japanese universities linking together in a single broadcast programme of open lectures, an educational network in the American state of Maine linking high schools and university libraries through E-mail, or an Open Learning Agency in British Columbia, Canada, using cable television and other resources to link adult learners to a wide menu of options, examples are emerging of moving the organisation of learning beyond the limits of single educational institutions. An important element in this is to put learners in contact with each other, as well as with a range of courseware. As the technology is developed to access all information from anywhere, the potential for integrated access is multiplied.

Yet as illustrated in the three-part analysis exhibited in the box below, integrated technologies do not automatically produce integrated access to learning. This requires not only the technical possibility of accessing information, courseware, teachers and other learners from remote locations, but also an effective matching of particular groups of learners with particular types of learning resource. The rapid expansion of accessible information and learning opportunities -- the release of the "waterfall" -- could potentially create a confusion rather than improved learning quality, if not accompanied by appropriate educational infrastructure.

Educational infrastructure, seen as a crucial link between technological capacity and services "supplied" by individual organisations, must perform a range of tasks. (The degree to which this infrastructure is provided by public bodies will vary according to different cultures and traditions). The most fundamental one is that of guidance -- putting students in touch with appropriate courses, and ensuring that new techniques are properly marketed to those who might benefit. Although marketing might naturally be seen as the responsibility of individual providers, a central public body may have an important role to play in describing quality and in grouping services into "families" according to subject-area and/or technological mode of access.

Other potential aspects of educational infrastructure include the operation of study centres, the validation of qualifications and the provision of possibilities of credit accumulation among institutions. Study centres, for example in France, are offering the opportunity of access to the university system from sites in more remote areas. The localised study centre offers an intermediate option between remote and campus-based study, where support and guidance can potentially be more effective than in the case of the isolated learner.

"What Integrated Access is":

A menu of providers and services
Freedom of movement for learners (home, work, study centre and/or campus)
For provider, making it easier to find and teach distant learners
Providers helped to find students with appropriate equipment, links and support

"Achieving Integrated Access":

Layer 1: Multi-use technological infrastructure
Layer 2: Systemic educational infrastructure
Layer 3: Specific educational services from various providers

"Educational Infrastructure for Integrated Access":

Marketing and advising
Periodically defining several discrete families of technology access, and periodically surveying which potential learners fit in each family
Study centre operation
Proctoring of examinations
Credit banks, portfolios and transcripts

Conference Working Group (Stephen C. Ehrmann, United States)

Can new technologies help contain educational costs?

"We should not automatically assume that new learning technologies will be more economical. Distance learning through old-fashioned correspondence courses is extremely cheap".
(Conference participant)

The greatest certainty about the cost of emerging educational technologies is that they are highly uncertain. It is true that large savings in unit costs per student have been clearly demonstrated when comparing examples of students independently following technology-based study programmes with courses delivered directly by teachers[9]. What is much harder to establish with a rapidly-changing technological picture is the comparative cost-effectiveness of different methods, in terms of learning outcomes. It is also impossible to assess such cost-effectiveness in isolation from the changes in educational structures that are needed to make the most of new techniques.

The biggest cost advantage of computer-aided learning is that it offers a potentially favourable trade-off between high development costs followed by huge economies of scale in delivery. Just as the high cost of making a television programme does not prevent it costing a tiny fraction, per audience member, of a play performed at a theatre, so the possibility of reproducing effective "courseware" for a large number of users means that it could potentially pay back its development cost several times over.

BEST COPY AVAILABLE

The biggest caveat to this argument is that effective learning cannot necessarily be disseminated as easily as a television programme. If high-quality learning experiences are wanted, it will often be necessary to offer considerable support to learners, which may be aided by technology but will ultimately need some form of direct communication between teachers/mentors and learners.

The attractive prospect is that new technologies, intelligently used, could start to meet an urgent "triple challenge" in post-secondary education. This challenge consists of:

i) growing demand in terms of student numbers;

ii) limits to the level of resources available, due to constraints on public and private spending; and

iii) a concern about quality, especially in higher education, where there are fears that it might be sacrificed for the sake of processing larger numbers of students.

A CERI report suggested that strategies that aim to use technology to enhance access and enrich quality are also of interest for their implications in controlling costs, in the following ways:

"Major reductions in attrition, due to the excitement and commitment that can be created by project-based, collaborative learning and the social bonds formed through networking; if more students graduate, the costs per graduate can be sharply reduced.

Increasing average size of classes by enabling higher enrolments in classes that would otherwise be unacceptably tiny, and by making it feasible and effective to offer courses that would otherwise be unacceptably large by creating intimacy on a large scale.

The possibility of reducing capital and operating costs when students are educated in 'virtual space' rather than in brick-and-mortar facilities.

Sharing resources through networks or inexpensive duplication that each department or institution might otherwise buy or create separately.

Reducing costs borne by students. One way to reduce student costs (applicable to working adults) is to reduce the time spent in completing the programme, e.g. by reducing time spent in commuting and increasing time spent in studying. If increased engagement and changes in policy make it possible to attain a degree more quickly, the adult may save in one of the most substantial costs of education: income that is foregone in order to pursue an education.

If all these factors enable students to take more classes per year and work more quickly towards a degree, the institution can thereby control costs by using the same physical facilities to educate more students per year[10]".

Resource-based learning and the autonomous learner

"We should be talking not of the self-directed learner, but of the autonomous learner".
(Conference participant)

There is a strong consensus that one of the greatest potential uses of technology is to put learners more in control of their learning. Behind semantic arguments about terms such as "self-directed" and "autonomous" learning lies a degree of uncertainty about how self-sufficient learners can or should become. It is one thing giving adults a high degree of choice about how to put together taught modules into a course of study that suits each individual; it is quite another to link them to packages of software and tell them to steer their own course through them without support. It is generally acknowledged that most learners need a certain level of guidance and direction that can only be gained through direct interaction with individuals, electronically or otherwise. This raises important questions about how to build up guidance services, particularly for adults, which have so far been highly limited.

The exact shape of what kinds of learning are on offer in the future will depend to a large extent on the development of courseware. The following are some examples of "families" of educational software presently available[11]:

"Worldware" refers to hardware and software originally designed and marketed for purposes other than instruction. In many countries, worldware is used more often for instruction than is courseware specifically designed for instructional use. The most common types of worldware are familiar to most people: word processors, spreadsheets, statistical packages and the Internet.

Student editions of worldware are packages developed or marketed for instructional use, but bearing a strong resemblance to worldware. They may be current or old versions of worldware sold at a student price. They may be developed by faculty with simpler interfaces or adjunct instructional materials. Student editions share many of the advantages of worldware such as the hidden subsidy of research, development and marketing.

Niche curriculum software. Developed and marketed cheaply, these packages are also acceptably inexpensive to upgrade. Sometimes they make money, but sometimes their developers keep them alive because of their passion for the subject. Seldom of revolutionary impact, they are more likely to provide modest labour-saving or instructional impact and to fit painlessly into relatively traditional programmes. In sum, this software is useful, but is not likely to be crucial to restructuring post-secondary education.

Course-sized bodies of materials are occasionally viable. Of special interest are materials designed to help institutions increase enrolments by supporting students who seldom come to the campus to study. If institutional budgets depend on enrolment, they have sometimes found it worthwhile to share in the development costs of such courseware in exchange for free or low-cost use of the resulting materials; improvements in enrolment help justify the up-front investment in the materials.

In courses providing directed instruction with relatively stable content to large enrolments, with faculty playing a tutorial and support role, packages of high-quality course material (print, video, audio, software) can provide a full course of study for some students while being used for many other

BEST COPY AVAILABLE

purposes as well. Materials from the British Open University are used in traditional settings elsewhere in the United Kingdom and elsewhere in the world.

Extensible software. This small but growing family is software that can be easily expanded and upgraded because of its underlying architecture; its structure also tends to make it exceptionally flexible for use in multiple settings and for multiple purposes. "Slice of Life" and "Bio-Sci", for example, are two extensible "student editions" that are both biology videodiscs. Both are a decade old and in wider use than ever before. Each one is an archive of slides and short motion segments. Because of this "slide archive" architecture, they can be easily expanded and updated by adding new slides and new motion segments.

Qualifications, jobs and the recognition of learning

"The desire for a diploma [in France] remains strong for those who have not had the chance to get one...There is a strong demand among workers for a 'second chance university'".

"The ultimate purpose of the promotion of lifelong learning in Japan is to overcome the diploma-oriented society".
(Conference participants)

If lifelong learning is about self-improvement, and about the acquisition of competence that increase one's effectiveness in and out of work, then it might be supposed that qualifications should be relatively unimportant. This seems most clearly to be the case in a situation like that in Japan, where informal learning in adulthood is counterposed to the excessively credential-based learning of initial education. When talking of a "diploma-oriented society", the Japanese refer to a situation where the most important objective of childhood is to acquire a diploma from a well-respected high school or college, and thus to get secure life-long employment. This puts undue emphasis on passing entrance exams to the best institutions, rather than on learning for its own sake or developing useful skills. A less diploma-oriented society would increase the value of learning for self-improvement rather than learning to acquire a piece of paper.

Yet as illustrated by the quote from France above, a shift to lifelong learning in most countries, would not necessarily reduce the emphasis on qualifications. Especially where employment is concerned, the benefit of learning is for many people contingent on some external recognition that learning has taken place. If this demand for qualifications is to be reconciled with a demand for learning that goes beyond traditional forms of classroom learning leading to traditional-style qualifications, two issues need to be resolved.

First, ways need to be found of designing qualifications that authentically measure the acquisition of competence rather than recording such things as hours studied or ability to pass an exam. In the United States in particular there is a search for an "authentic" form of certification, to replace testing that relies for example on answering computer-graded multiple-choice questions.

Secondly, there will be a need to reconcile the increasing availability of self-accessed learning resources with the continuing demand for accreditation. Ways may need to be found of monitoring the quality of courseware being offered more or less openly, and of certificating those who have gained from it. Parallel to a revolution in learning software, there may also need to be a revolution in assessment software. Unless confidence can be created in the accreditation side of new learning technologies, there is a danger that a significant proportion of potential users will simply ignore them, opting instead for institution-based learning that may not be as easy to "access" as more modern modes, but at least carries the advantage of public recognition.

PERSPECTIVES 3: LEARNING BEYOND THE NATION-STATE

Culture as a barrier or an incentive to internationalisation?

"Technology can help us to export our cultures".
(Conference participant)

Cultural differences are often seen as insuperable obstacles to an internationalised system of learning. Differences among learning institutions, traditions and qualifications structures in each country makes it difficult to construct common experiences, beyond the occasional student exchange, whose participants gain mainly an appreciation of how different things are in other countries.

One reason for thinking that the scope for co-operation is growing is that some cultural differences are diminishing, as global influences create more common reference-points in life in different countries. But conversely, it is also possible to see cultural differences as important reasons for internationalisation. One can learn more from the observation of the unfamiliar than of the familiar. Moreover, in the global marketplace, nations and regions have a desire to make their culture better known in different parts of the world, as something distinctive for "export".

Although learning systems have traditionally been constructed in a national context, there is plenty of scope for sub-national regions, with the help of technology, to use learning to develop their distinctiveness in an international marketplace. This is the case, for example, with Burgundy in France, where a computer network links small businesses, the University of Burgundy and high schools -- into a common set of courses and services. This initiative is ultimately seen as a means of developing a rapidly-growing service-based economy, and of marketing its characteristics internationally.

Burgundy, a region whose name is known worldwide for its wine, has long had its place in a "world culture". But might internationalisation make things harder for lesser-known cultures, and lead to a degree of "cultural hegemony" -- the imposition of a foreign set of norms and reference points on smaller cultures by larger ones? The most obvious way it may do so is in the linguistic context. English is clearly the dominant language of international networks. It is also the language of many international forms of educational

collaboration. It will be a difficult task to ensure that linguistic diversity is nurtured rather than stifled as learning becomes more of a global enterprise.

What kinds of supranational infrastructure?

"Is there a risk of incoherence which prevents the necessary integration of national networks with a big European network?"
(Conference participant)

As goods and people move ever more easily around the world, it seems increasingly inappropriate that knowledge and learning should be constrained by national boundaries. It is possible to conceive of three levels at which international efforts to facilitate a global approach to learning might be strengthened:

-- First, in the short term, it is necessary to ensure that infrastructure be developed to allow efficient communication across national boundaries. This technical task is by no means easy, as has already been demonstrated for example by the different television systems adopted in different countries, letting Europeans watch a video cassette made for an American audience. In the development of the "information superhighway", there could be similar incompatibilities for some time, because some countries will find it more economic to base the "highways" on the telephone system, others on the cable television infrastructure. Supranational bodies have an important role to play in the coming years, in attempting to move towards compatibility.

-- Second, in the medium term, "programmatic" initiatives, organised by international agencies and others, will lead to an ever-richer form of collaboration among learners in different countries. Examples of these programmes are given in the box below.

-- Thirdly, in the long term, there is potential for a convergence in learning systems that makes it easier for learners to transfer from one country to another, and less important in which country one qualifies. As suggested above, it is not desirable for all learning systems to become identical: diversity is richness. But there would be great value in increasing compatibility, in terms of:

i) Credit accumulation and transfer;

ii) Mutual recognition of qualifications;

iii) Most importantly and most problematically, common definitions of quality, which make credit transfer and recognition more acceptable. It is hard to envisage operable common definitions of quality without considerable strengthening of the role and capability of international institutions. It is worth noting in this context that even within a large country -- the United

States -- the mechanisms do not yet exist to validate quality across the post-secondary sector.

Programmatic initiatives by supranational organisations: some examples[12]

In the European Community:

The goal of the European Action Scheme for the Mobility of University Students (ERASMUS) was to increase substantially the number of students spending a period of study abroad, promote inter-university co-operation, contribute to the creation of a "people's Europe" and develop a pool of graduates with transnational experience. In phase II of the programme (1990-1994), around ECU 200 million was spent on assistance to some 10% of the EC's 6.5 million students.

The SOCRATES programme (1995-1999) continues the activities of ERASMUS, but aims to extend a European dimension to all the levels of education that it supports.

The Community Action Programme for Training and Technology (COMETT) aimed to give a European dimension to training related to innovation and social changes, to foster the joint development of training programmes and the optimum use of EU training resources, and to identify priorities requiring action by member states individually and in concert. COMMETT II (1990-1994) had a budget of around ECU 2 000 million; two out of every three COMETT projects have links with other EU programmes. The LEONARDO programme continues this activity from 1995 to 1999.

In North America

In 1993, Canada, Mexico and the United States announced:

The establishment of a North American Distance Education and Research Network (NADERN), a consortium to facilitate access to information and to support education, research and training among participating institutions;

The formation of an Enterprise/Education trilateral mechanism to examine issues relating to mobility, portability and certification of skills, and to consider common interests and approaches in technical, applied and life-long career education;

The establishment of programmes to enable faculty and administrators from all three countries to meet with colleagues to explore and develop trilateral higher education collaborative activities in priority areas of concern;

The establishment of an electronic information base in each of the three countries, with co-ordinated sharing of information on initiatives and resources relevant to trilateral co-operation;

The strengthening and expansion of North American studies programmes to promote trilateral linkages in support of research and curriculum development;

The establishment of a programme to support intensive trilateral exchange, research and training for students.

BEST COPY AVAILABLE

In the Asia Pacific region

The prime motivating force behind initiatives launched by supranational organisations in this region is improved economic growth. The Pacific Economic Co-operation Council, for example, has recently circulated a draft document on human resources among member countries; and the Asia Pacific Economic Co-operation group has established a programme to "develop regional co-operation in higher education, study key regional economic issues, improve worker skills, facilitate cultural and intellectual exchanges, enhance labour mobility and foster understanding of the diversity of the region".

In the Nordic countries

Cultural rather than economic co-operation -- and the strengthening of Nordic identity -- is the main motive behind the Programme for Nordic Co-operation in Higher Education, established in 1988. The Nordic Programme for the Mobility of University Students and Teachers operates under the framework of this large programme, which in turn is part of the action plan for Nordic cultural co-operation in general. A recent evaluation of the programme concluded that its future lay in forming an inner circle within broader co-operation networks on a European or global basis, but that improvement was needed in the areas of academic recognition and the exchange of academic and student information.

Chapter 3

POLICY IMPLICATIONS AND OPTIONS

BACKGROUND DISCUSSION

The requirements of and limits to government roles in lifelong learning are not always clear. This chapter reviews governments' options, and offers perspectives on how they might go about delineating their responsibilities.

Governments cannot independently create an ethos of lifelong learning; they cannot control or resist the internationalisation of knowledge networks or of educational services; create or control the development of new technologies or dictate their applications. Yet these are all things that governments might hope to influence as vital determinants of how learning will take place in the future.

There is a strong case for governments to play a strategic or "steering" role in relation to sectors where they cannot necessarily expect to be the main provider of services, but where there is value in influencing or providing a coherent framework for a range of providers. This strategic role might involve partnerships with providers, or regulation. Government's distinctive contribution is to formulate society's overall goals in relation to activities that might otherwise be a result of the uncoordinated actions of many others. Specifically in relation to the themes discussed at this conference, there is a particular need to consider government policy in relation to:

- *Harnessing new technologies.* Governments do not control the pace of invention or product development, although their subsidies can have a major influence on the direction and pace of research. Communications infrastructure can be influenced by government regulation and financing. But it is the development of *worthwhile learning applications,* rather than of hardware and infrastructure, that is likely to be of particular interest to governments in the coming years. Governments will need to negotiate and collaborate with the private sector in developing the technology of learning. It may be desirable for governments to lead the way by example, pioneering new uses of technology in public institutions that may be imitated more widely. But are public institutions capable of meeting this challenge, or is there a danger that they will lag behind the private sector?

- *The position and nature of public funding.* Despite the impossibility of government providing all post-compulsory education and training, it still plays an

important and sometimes a dominant role in financing certain sectors. In particular, it continues to fund the bulk of higher education in most European countries, and is the biggest single funder of post-secondary education in all OECD countries. This raises four main questions:

i) How should public funding be structured? One way is to allocate fixed funding to particular institutions or to fund courses within them; an alternative is to attach money to certain categories of students, and to allow "consumers" to determine which courses are funded, by enrolling in them. Although this method sounds like an obvious way of matching supply to demand, governments adopting the principle have still tended to define eligible courses according to the type of qualification awarded. More fundamentally, courses that are heavily or fully subsidised may be restricted to certain types of students defined for example by their age. An alternative, which would allow limited access to limited public funds, would be to give adults lifetime access to a defined amount of publicly-funded education, but not dictate the age at which they claimed this entitlement.

ii) How should financing responsibilities be divided among governments, employers and individuals? It is becoming clear that market forces do not always ensure that demand for skills from individual employers be translated into training, because they are unwilling to pay for the full value of skill gains which might be "captured" by competitors if an employee who has been trained leaves his/her job. Moreover, there is increasing support for the concept of joint investment among those with an interest in learning -- not only to enhance the amount of education and training activity, but also to raise its effectiveness by building a commitment and sense of "ownership" among all parties concerned, including the learner. But mechanisms for cost-sharing are still underdeveloped and need to be carefully worked out to ensure that they do not reduce access for those unable to pay.

iii) Does a major role for private institutions ensure better "market penetration": does it help to ensure that supply meets a wide range of demands? There are considerable differences among countries in the importance of private post-secondary institutions. In the United States and Japan they play an important role and have a significant impact on the overall supply picture. In most European countries, post-secondary provision is government-led. The United Kingdom is to some extent a hybrid model, in that public institutions have recently been made much more autonomous as suppliers in a competitive system, albeit within a framework closely controlled by government. There is no particular evidence that non-public providers are better at catering for traditionally undeserved groups, but they sometimes contribute to the diversity of provision and can potentially help to reduce institutional barriers to learning.

iv) How might funding be reoriented in the light of internationalisation? Access to public funding tends to be defined mainly on a national basis, and

sometimes on a sub-national basis (e.g. state universities and colleges in the United States). In short, domestic students are favoured in comparison to foreign students for access to publicly-funded institutions. While there are reciprocal agreements among governments (e.g. in the European Community) and many examples of special programmes to encourage cross-border flows (e.g. the EC's ERASMUS), there remain important inequalities in access to publicly-funded courses between domestic and foreign students. These differences raise the possibility that an internationalised market in learning will bypass publicly-funded institutions to the benefit mainly of private ones, who will become the main beneficiaries of new demand.

-- *Encouraging institutional change.* A repeated theme of CERI work on post-compulsory education and training is that institutions do not always change quickly enough to meet new demands and exploit new technologies effectively. Governments can seek to create new conditions under which institutions are encouraged to adapt. Funding incentives, discussed above, can be crucially important. To ensure flexibility of public institutions in terms of meeting demand, funding may need to be less specifically allocated to predetermined inputs, and related instead to outputs in terms of certified learning progress. But governments may also have to help institutions to change by supporting in-service training and by adapting regulations to a new environment in which a large proportion of learning takes place away from educational institutions.

-- *Assuring a well-recognised qualifications structure.* A diversification of learning methods and content needs to be accompanied by an adaptation of qualifications to ensure that learning outcomes are well-recognised by employers and others. One challenge is to find ways of certifying the acquisition of competence as well as of knowledge. Another is to devise a qualifications structure that measures learning outcomes regardless of institution or course attended. Since acceptance of qualifications is essential in a changing environment, it is important for governments and educational institutions to work closely with employers and others in providing this key element in the learning infrastructure. It is indeed possible to question the status of national governments or bodies appointed by them as the source of legitimacy of qualifications. As students and qualified personnel become more mobile between countries, it may become more important that a qualification is well-known at an international level, and valued by employers, than that a public agency gives it formal recognition. So governments need to choose their roles carefully -- can they help bring about a firm qualifications structure, without merely legislating it?

-- *Co-ordinating locally-based partnerships designed to improve access.* Many physical and situational factors may deter learning -- including the physical dispersal of facilities and the inconvenience of their opening hours. There is a growing trend for regional or city-based coalitions to seek ways of making learning more directly accessible, for example by establishing "knowledge resource centres" linked to more local sites by communication technologies.

Previous CERI work has identified the importance of local coalitions for ensuring that the learning resources of each community are co-ordinated in this kind of way[13].

-- *A potential government role as "supplier of national culture".* Recent disputes between Europe and North America, in the context of GATT, over the freedom of trade in cultural services highlight the growing difficulty in preserving national norms and values merely by influencing the content of cultural output in a national setting. While educators continue to debate domestically what to include in national school curricula, children and adults are increasingly subjected to international knowledge sources. In future, cultural battles are more likely to be fought on information superhighways than in national curriculum councils.

In conclusion, governments can aspire to co-ordinate an infrastructure for learning that makes it easier for suppliers to meet various demands. At the present time of general uncertainty about the appropriate nature of government's future role, an international dialogue on possible approaches is proving useful. One reason is that countries have adopted quite sharply differing approaches to supply mechanisms, despite the fact that they face a more or less common set of new demands. Institutions and national strategies differ, for example in terms of the role played by enterprises in the training of workers. Although not all features of one culture are immediately transferable to another, it should be valuable to exchange ideas about how well various practices, old and new, succeed in meeting the growing demand for learning throughout the lifecycle.

PERSPECTIVES 4: PUBLIC-SECTOR RESPONSIBILITIES

Governments as highway-builders or traffic-planners?

"Education ministries must decide priorities, the private sector must help find solutions".
"The most helpful thing that governments can do is: nothing".
(Conference participants)

The expected impact of information superhighways has caused free-market advocates to worry that there will be too much planning, and planners to worry that there will be chaos. Between the two extremes, there is widespread acknowledgement that there government's role will be significant, alongside a high degree of activity by the private sector. Yet there is no consensus about how exactly to divide responsibilities between the public and private sectors.

Indeed, when it comes to the provision of technological infrastructure and educational services, a two seemingly mirror-image perspectives can be identified. Some argue that the infrastructure should be guaranteed by the public sector, allowing a pluralism of provision; others that the private sector will be much better at identifying which infrastructure is appropriate, and that governments should only make decisions about certain educational applications. These perspectives are not necessarily as diametrically opposed as

it may seem, as people's definition of what constitutes "infrastructure" and what is an application or service may vary. But they represent very different starting-points:

-- A public sector view:

"The education and training Ministers (in Australia) believed there would be advantages in collaborating on initiatives, and uniting to seek solutions to problems, and then approaching private enterprise, rather than the business world dictating developments in education. However, where some innovations require a large infrastructure beyond the scope of education providers, those providers will provide advice into the development of that infrastructure and then choose their level of application of that technology. Broadband services is an example.

"The Open Learning Technology Corporation was established to act as a facilitator, broker, lobbyist and information service on open learning matters...Our clients express their requirements of technology in order that learning and teaching can be improved and greater access can be given to previously disadvantaged groups. Through working parties of experts, we develop technical standards and guidelines for communications technology and equipment. We also act as brokers between education systems and private enterprise". (Julie Carr, Australia)[14]

-- A private sector view:

"What can governments do, if anything, to encourage the development of educational functions for the broadband networks? With regard to the development of the infrastructure itself, the most important thing that government can do is to get out of the way -- or to clear regulatory obstacles that impede the development of the networks. When I hear politicians or bureaucrats talk about the need for governments to "set standards", it makes my skin crawl. The whole point of the trials underway in the US and elsewhere is to try to assess the technical and consumer issues that are fundamental to the venture. It will be messy in the short run, but much more efficient in the long run. The competitive market mechanism itself will be a boon to consumers since it will drive down the cost of services. True "universal access" is more likely to come from having all services be inexpensive than from some government-imposed redistributive scheme.

This is not to say that there is absolutely no useful role for government to play in the development of interactive educational content. On the supply side, the government could itself participate in some of the interactive trials by creating demonstration applications or, more realistically, funding that development by third-parties. To promote distant learning the government might set up a digital archive of great teaching by great teachers.

In all honesty, however, I think the government's role on the supply side will (and probably should) be rather limited. Just as government generally doesn't write good books, make good movies or record fine music, it is unlikely that government will create great interactive educational software. If government wants to encourage the development of interactive educational content, it will be most effective on the demand side -- by creating more learners. For example to stimulate demand for interactive lifelong learning applications, the government might allow individuals to set aside pre-tax dollars into optional "education accounts" that could be used for various forms of inservice training". (Scott C. McDonald, United States)[15]

BEST COPY AVAILABLE

Resource allocation: Who decides?

"The learning society cannot be about planning".
(Conference participant)

Governments that believe in giving material support to the promotion of a learning society have a difficult task determining how public resources should be allocated. On the one hand, acknowledgement of the importance of consumer demand would seem to support moves towards "choice" models, whereby resources are allocated according to the decisions of learners rather than the priorities of planners. Yet in practice, governments have found it difficult to link resource allocation completely to demand, for example because:

-- They have preferences about what kinds of studies receive public support. For example where the learning society is supported primarily for its economic benefits, there is a propensity to give "vocationally-relevant" courses privileged funding;

-- They wish to skew financial support to certain age-groups, most commonly the young;

-- They wish to link resource allocation to quality -- a commendable condition of funding; yet there is a thin line between defining quality and giving preferential treatment for certain types of learning;

-- If access to publicly-funded courses is formulated in terms of consumer entitlements rather than supplier provision, it becomes much harder to forecast the impact on public spending, which will depend on take-up.

This does not prevent support for learning from starting to move away from a supplier-dominated model. But for governments to give due weight to learner preferences in allocating funding, they may often need to resist the urge to intervene and define too closely what kind of learning is suitable for public support.

Conclusions

PRINCIPLES FOR LEARNING IN THE 21st CENTURY

"To ensure all access, anytime and anyplace, to quality education and training to meet their individual learning and workplace needs.

This vision sees new environments for lifelong learning that use technology to support new models of learning and teaching for learners of all ages and conditions. These learning environments extend beyond the confines of classroom walls". (Linda Roberts, United States)[16]

There are still more uncertainties than certainties about what learning beyond schooling will look like in 20, 50 or 100 years time. We know that it will be more diverse both in demand terms -- the characteristics and objectives of learners, and in supply terms -- the various modes of learning that are available. Today there is a strong consensus which did not exist five years ago, both on the inevitability of the supply-side changes implied by technological development and on the desirability of meeting new demands.

There is also a wide measure of agreement, even in the face of uncertainty about the specifics of future change, on some of the general principles that policy makers need to bear in mind when responding to developments in the years ahead. These principles can be summarised under six main headings:

1. **Learning in the 21st century will become an essential part of everyday human activity**.

   -- The close relevance of learning to people's lives, as workers, citizens and consumers, in a "knowledge-oriented" society, will stimulate demand for learning of all kinds.

   -- This demand will focus in particular on learning of a kind that is integrated with everyday activities, rather than detached from them.

   -- Although learning has always been a significant part of much human activity, *conscious* learning will become more important in the coming years, beyond the schoolrooms and lecture theatres with which it has traditionally been associated.

2. **Access to learning in the 21st century will need to become as near to universal as possible.**

-- As learning becomes more of a consumer-oriented activity, it will be particularly important to avoid a polarisation between opportunities to learn for the privileged and for the less privileged, mirroring inequalities in access to other consumer goods and services.

-- It will be possible to remove barriers of age, time and place, as techniques evolve to allow people of all ages to learn, at times and in places that fit in with their lives. These learning opportunities will therefore need to be "tailor-made" to each individual.

-- Financial constraints will continue to be an important barrier, and will need to be addressed for those least able to afford the cost of learning.

-- Lack of information will also become a key constraint to access unless measures are taken to ensure a more equitable distribution of knowledge of opportunities.

3. **Learning technologies in the 21st century will need to respond flexibly to learner needs. Governments in partnerships with providers will need to make a particular effort to improve access to under served groups.**

-- The development of hardware will not in itself revolutionise the technology of learning: the development of courseware that is genuinely educative and of communication software that creates the best possible learning environments will require the most sophisticated educational thinking available.

-- Technologies will need to be designed to be easy accessible to learners with diverse characteristics, including many with low levels of initial education.

-- Technologies will need to be as "interactive" as possible, putting the learner in control rather than merely delivering pre-packaged knowledge.

4. **Learning suppliers in the 21st century will need to adapt their ways to meet the changing demands of their clients and to maximise the potential of new delivery techniques.**

-- Institutions will need to adapt their structures to become more like service organisations, implying a new kind of relationship with students.

-- Teachers will need to take on new roles; as the means of access to knowledge and learning multiply, teachers will be seen increasingly as guides on the "superhighway" rather than as drivers.

5. **Governments in the 21st century will need to play an active role in supporting the learning infrastructure, but should not expect to control the learning agenda.**

-- In partnership with others, governments will be responsible for ensuring a clear framework for learning, underpinned by a sound qualifications system.

-- Governments will play an important part in the removal of barriers to learning, helping in particular to provide finance and information to those who lack it.

-- Although governments and public organisations will in some cases continue to play an important role as direct providers of education and training, consumer demand will play a more prominent role than national planning in determining the structure of supply.

-- Attempts to influence learning patterns at a national level will compete with both internationally- and locally-based suppliers.

6. **Learning in the 21st century will need to be a collaborative enterprise.**

-- Individuals, employers, governments and others with a stake in learning will increasingly combine their financial resources and efforts to reflect a common interest in learning outcomes.

The above principles combine an acceptance of emerging learning patterns with an awareness that they will not inevitably develop exactly in the ways that are desired. The markets alone will not automatically create the best learning applications of new technologies, accessible to the widest possible number of people. Governments and others with an interest in learning societies will need to pursue these principles actively to ensure the best results.

Annex 1

LEARNING BEYOND SCHOOLING: THREE CERI APPROACHES

A study of lifelong learning

This study, launched in 1992, follows on from CERI's work on technological change and human resources development in the 1980s, and from its pioneering of the concept of recurrent education in the 1970s[17]. A full discussion of the themes covered is distributed in Perspectives on Lifelong Learning, from Ideal to Reality, LBS(94)4.

For two decades, CERI has been pressing for a shift away from a model of education skewed excessively towards youth. Its work on human resources demonstrated the importance to advanced economies of workers who are not just well-educated but who continue to learn. This priority was acknowledged by OECD education ministers at their last meeting in Paris in 1990, who made it clear that lifelong learning should be central to any educational strategy, in order "to participate actively in today's rapidly changing labour market and society[18]".

The study on lifelong learning has concentrated on examining ways of reducing barriers to adult learning -- as well as considering what changes to the school curriculum might be implied by a lifelong learning ethos. In its approach to the adult learner, this work looked not just at how to create better access to courses, but also what makes adults learn: the determinants of demand.

This work has led in particular to three significant documents discussing factors that influence the level of learning activity among adults, as well as analysis of the implications of lifelong learning for the school curriculum:

- An examination of *incentives* for worker participation in education and training[19], carried out jointly with the National Center on Adult Literacy in the United States, looked at conditions that influence demand. It identified a number of financial, situational and other barriers that need to be overcome if education and training provision is to be translated into effective learning.

- A study of *city strategies for lifelong learning*, identifying seven cities in different settings that are consciously trying to create a local culture favourable to learning[20]. This study observed ways in which an active, community-based learning culture can be enhanced both by established local traditions and by new initiatives involving coalitions of various partners from the public and the private sector.

- A direct consideration of how well supply is matched to demand in various specific education and training sectors, including literacy instruction, courses of the long-term unemployed and the upgrading of service-industry workers' general skills[21].

-- Analysis of the implications of lifelong learning for the school curriculum. The conclusion was that schools should aim to create a solid base and an appetite for further learning, and aim to develop self-directed learning skills, rather than to regard their mission as the delivery of a "complete" education.

At a seminar held jointly between the OECD and the Japanese Ministry of Education, Science and Culture in Tokyo in June 1994, these themes were brought together and related to a further issue: the degree to which lifelong learning is pursued for "consumption" compared to its role as an "investment" in economically productive skills. Although the emphasis on these two aspects is different in various member countries, it was concluded that there is in reality an increasing overlap between these two purposes, with most learning involving some kind of investment in competence as well as producing some aspect of self-fulfillment or direct enjoyment.

A study of education in a new international setting

This CERI study, started in 1993, is looking at ways in which higher education is becoming more internationalised. Although acknowledging that universities have always had an international dimension, the study identifies a new trend towards internationalisation related to the globalisation of economies, increased mobility and the desire for increased cultural links. Internationalisation can take a number of different forms, from a more cosmopolitan curriculum to movement of students and teachers between countries; distance technology allows for a greater of international contacts which may not involve physical movement.

The study has started by identifying the interest of various "stakeholders" (governments, businesses, teachers, students) in creating a more internationalised higher education sector[22]. For the "macro" actors -- governments and representatives of business -- the impetus was overwhelmingly economic. As economies become more economically and technologically interdependent, it is felt that no country can afford to neglect an international dimension to the production, exchange and transmission of knowledge. For the "micro" actors -- students and academics -- there is greater emphasis on cultural and linguistic understanding, as well as on improving the quality of education, for example through international teacher exchanges. Further work being carried out under this study is focusing on the internationalisation of the curriculum.

How far can technology enhance internationalisation through distance education? A review of experiences and prospects[23] concludes that although most distance learning has so far taken place within national boundaries, there is much scope for a more international dimension. There has already been useful experience in, for example, the international dissemination of teaching materials, which allows greater specialisation in certain fields and more viable markets for producers from small countries. But among the constraints that may keep much learning within national confines are nation-based funding structures and a reluctance to make a university's "intellectual property" more widely available.

A study on the impact of information and communication technologies on post-secondary education

Following on from work on the emerging uses of information technology in schools, this study starts from the premise that at the post-secondary level, technology can not only help meet new

demands but also profoundly change the way in which knowledge is created and transmitted. During 1993 and 1994, two main lines of enquiry have been pursued:

-- The present situation has been explored through country studies and case studies on the state of the art in technology-assisted distance learning and open learning.

-- Emerging issues have been addressed by experts, through working groups which have produced three thematic clarifying reports.

The study's findings on the "state of the art" confirm that distance education is well-established in virtually every OECD country, but that for the most part it has been used as a means of supplementing traditional practices rather than being an engine for fundamental institutional change[24]. Examples abound of videoconferencing, new uses of computerised communications between teacher and student and between students, and the increased use of distance education techniques to supplement campus-based learning. But these techniques have not yet replaced traditional ones as everyday tools.

The themes that have been specifically addressed by the three working parties[25] have been:

-- A "*triple challenge*" of accessibility, quality and costs: the question of how to extend access to learning within limited resources without lowering standards. The use of technology to achieve economies of scale and reduce the capital requirements associated with campus-dominated learning is seen as a significant opportunity. But this is not a simple process of mailing software to students rather than teaching them: it involves a sophisticated and fundamental approach to institutional change which will produce, where appropriate, collaborative learning in study-centres, supported through real-time and time-delayed communications between teachers and students, and a new emphasis on project-based work as an alternative route to excellence.

-- *The future of face-to-face and distance teaching*: the development of post-secondary institutions, many of which are moving towards a "dual mode" of teaching, combining on-campus and distance methods. The CERI work on this theme suggested that it is misleading to emphasise the distinction between these two modes rather than the distinction between different approaches to teaching and learning regardless of mode -- and in particular the potential for a technology-assisted move towards more open and *self-directed* learning. The report on this theme argues that new communication technologies have not automatically created a revolution in *educational* techniques, due to the persistence of existing institutional cultures, which are heavily influenced by existing government policies and in particular by funding regimes.

-- *The future of technology in post-secondary education*: the implications of technological advance for distance communication, networking and the use of various electronic media. The report on this theme, like the other two, concludes that the use of technology on its own will not change education, unless accompanied by institutional change -- which has not always occurred in education as a response to past technological advances. But it suggests that the pressures for such change are now greater than they have ever been, with the entry into post-secondary education of a fresh and more numerous cohort of teenagers with different needs from past generations, as well as the overwhelming need in society for the continuous updating of knowledge as it becomes obsolescent at an accelerating pace.

Annex 2

PROGRAMME OF THE CONFERENCE

Wednesday, 14th December 1994

Morning	**Plenary Session: Room 1**
09.30 - 10.00	Welcome by The Honourable Flora MacDonald, Former Minister of External Affairs and Former Minister of Communications of Government of Canada, President of the Conference Conference inauguration by Pierre Vinde, Deputy Secretary-General of OECD Opening remarks by Tom J. Alexander, Director of DEELSA and CERI
THEME 1:	**NEW DEMANDS FOR EDUCATION AND NEW FORMS OF SUPPLY**
10.00 - 10.30	**A View from France in the European Context** by Maryse Quéré, Special Adviser on Distance Learning and New Technologies to the General Director of Higher Education, Ministry of Higher Education and Research, Paris Discussion
10.30 - 11.00	**A View from the United States in the North American Context** by Linda Roberts, Special Adviser on Educational Technology, Office of the Deputy Secretary, US Department of Education, Washington, DC Discussion
11.00 - 11.30	**A View from Japan in the Pacific Context** by Kaoru Okamoto, Planning Director for Lifelong Learning Policies, Ministry of Education, Science and Culture, Tokyo Discussion Brief summary by the President, and introduction to the videoconference
11.30 - 12.00	Break

Wednesday, 14th December 1994

12.00 - 13.15 **Videoconference: Room 1**

Responses by education policy-makers and representatives from private enterprise

-- **Helsinki** (13.00 - 14.15)

Olli-Pekka Heinonen, Finnish Minister of Education

-- **Canberra** (22.00 - 23.15)

Alan Ruby, Deputy Secretary,
Department of Employment, Education and Training

Julie Carr, Chief Executive Officer
Open Learning Technology Corporation

-- **Toronto** (06.00 - 07.15)

Jan Donio, Assistant Deputy Minister, Organisation, Development and Services , Ministry of Education and Training

David Ticoll, Executive Director, Alliance for Converging Technologies

-- **Tokyo** (20.00 - 21.15)

Hidetoshi Kato, Director of the National Institute of Multimedia Education

Masanori Ogino, Senior Chief Engineer, Information and Image Systems Division, Hitachi Lit.

-- **Stockholm** (12.00 - 13.15)

Stig Hagström, Chancellor of Swedish Universities and Colleges

Brief summary by the President

Wednesday, 14th December 1994

Afternoon	**Plenary Session: Room 1**
THEME 2:	**LEARNING BEYOND SCHOOLING -- THREE CERI APPROACHES**
15.00 - 15.10	Emerging and common issues and trends in learning beyond schooling from three CERI studies by Jarl Bengtsson, Counsellor, CERI
15.10 - 15.30	**Meeting the needs of all adults : A Lifelong Learning Strategy** The CERI study on Lifelong Learning: Main issues and future developments [ref. CERI/LBS(94)3, paras. 18-22; CERI/LBS(94)4] by Donald Hirsch, Consultant to CERI, London *Comments* by Yoshihiro Yamamoto, Director, Lifelong Learning Development and Evaluation Section, National Institute for Educational Research, Tokyo
15.30 - 15.50	Discussion
15.50 - 16.10	**Learning Across Borders: New Developments and Issues** The CERI study on Education a New International Setting: Main issues and future developments [ref. CERI/LBS(94)3, paras. 23-25; CERI/LBS(94)8] by Yu Kameoka, CERI *Comments* by John Mallea, Professor and Past President of Brandon University, Canada
16.10 - 16.30	Discussion
16.30 - 17.00	Break
17.00 - 17.20	**Self-Learning, Face-to-Face Learning and Information Technology: Great Expectations** The CERI study on The Impact of Information and Communication Technologies on Post-Secondary Education: Main issues and future developments [ref. CERI/LBS(94)3, paras. 26 to 28; CERI/LBS(94)5 and CERI/LBS(94)6] by Pierre Duguet, CERI *Comments* by William Renwick, Honorary Senior Research Fellow, Stout Research Centre, Victoria University of Wellington, New Zealand
17.20 - 17.50	Discussion
17.50 - 18.00	Summary by the President, and introduction to Working Groups

Thursday, 15th December 1994

THEME 3: TOWARDS NEW INFRASTRUCTURES FOR LEARNING

Morning **Working Groups** [ref. CERI/LBS(94)3, paras. 29-41]

09.30 - 12.30

TOPIC 1: FLEXIBLE AND OPEN-LEARNING PATTERNS

Chair: Marino Ostini, Federal Office for Education and Science,
Berne, Switzerland and Chairman of the OECD Education Committee

How might learning experiences be better structured over the day, week, year, or life-cycle?
What are the new deve')pments in self-directed learning?
What are the main ways in which conventional face-to-face tertiary institutions need to adapt?

TOPIC 2: ADULT LEARNING: PROCESSES, TRAINING TEACHERS, AND DEVELOPING NEW TEACHING METHODS

Chair: Janet Jenkins, International Consultant, London and
Former Senior, Programme Officer, The Commonwealth of Learning

What are the learning strategies and processes for adults?
How are teachers selected, trained and retrained?
How is the training of trainers organised?
How could information technologies help teachers to teach?

TOPIC 3: INTEGRATING LEARNING IN THE WORKPLACE, EDUCATIONAL INSTITUTIONS AND THE HOME

Chair: Stephen C. Ehrmann, Senior Program Officer,
The Annenberg/CPB Projects, Washington, DC

What are the potential benefits for learning to be gained by developing, through networks and in the future through information highways, integrated access to educational facilities existing in various settings?

Thursday, 15th December 1994

THEME 4: **THE USES OF TECHNOLOGIES FOR MEETING NEW EDUCATIONAL NEEDS: DEMONSTRATION AND DISCUSSION**

Afternoon **Plenary Session: Room 1**

14.15 Introduction by the President

The use of videoconferencing, broadcast TV and CD ROMs in a vocational setting at the Adelaide Institute of TAFE (Technical and Advanced Further Education), Australia

Presentation by Brian Stanford, Director, Adelaide Institute of TAFE

Discussion

15.15 - 16.15 **Using Advanced Technologies to Improve Adult Literacy in the United States**

by Daniel Wagner, Director, and Karl Rethemeyer, Technology Specialist, US National Center on Adult Literacy, Philadelphia

Discussion

16.15 - 16.45 Break

16.45 - 18.00 **The introduction of information highways: French developments in the context of European initiatives**

Videoconference between Room 1 and the Commission of the European Community, Brussels

French experts:
- Bernard Loing, Inspector General, Ministry of Industry, Post and Telecommunications and External Trade, Paris
- Professor Jacques Hebenstreit, Former Head of the Computer Science Department, Ecole Supérieure d'Electricité, Paris
- Jean-François Tournu, Administrator of Post and Telecommunications, Advisor for Communications Technologies to the Region of Bourgogne, Dijon

Representatives of the Commission:
- Luis Rosello, Head of DELTA Programme, Directorate-General for Telecommunications, Information Market and Exploitation of Research (DG XIII), Brussels
- Simon Bensasson, Head of Unit, Training Issues, ESPRIT Programme Directorate-General for Industry, (DG III),Brussels

18.15 - 20.00 Reception, Room A, Chateau de la Muette

Friday, 16th December 1994

Morning	**Plenary Session: Room 1**
09.30 - 10.15	Reports of the Working Groups by the Chairmen
THEME 5:	**POLICY IMPLICATIONS AND OPTIONS**
10.15 - 11.15	**The role of the private sector in leading the way to new learning technologies**
	by Scott McDonald, Director of Research, Time Warner Inc., New York
	Respondent:
	Mark Frequin, Director of Strategic Policy and Control Ministry of Education and Science, The Netherlands
	Discussion
11.15 - 11.45	Break
11.45 - 12.30	**The views of business/industry and trade unions on matching new forms of supply with new demands for training**
	by Kaisa Kauto-Koviula, Human Resources Development Manager, Nokia Telecommunications, Helsinki, The Business and Industry Advisory Committee to the OECD (BIAC) and by Bert Clough, Senior Policy Adviser on Education for the Trade Union Congress (TUC), London, The Trade Union Advisory Committee to the OECD (TUAC)
	Discussion
12.30 - 13.00	**Closing Addresses**
	Jeanine Feneuille, General Inspector for Education, Ministry of Education, Paris and President of the CERI Governing Board
	Malcolm Skilbeck, OECD Deputy Director for Education
	Final remarks by the President, The Honourable Flora MacDonald

NOTES

1. *The OECD Jobs Study*, OECD, Paris, 1994.

2. Discussion of these themes was brought together in the base document for the conference: "International Conference on Learning Beyond Schooling -- New Forms of Supply and New Demands, Background Report", CERI/LBS(94)3.

3. From Karou Okamoto, Ministry of Education, Science and Culture, "Lifelong Learning Movement in Japan -- Strategy, Practices and Challenges", Tokyo, 1994.

4. "The Future of Post-Secondary Education and the Role of Information and Communication Technology: A Clarifying Report", CERI/LBS(94)5, Part II (Conference Document).

5. For further discussion see *ibid*, part III.

6. Maryse Quéré is Special Advisor on Distance Learning and New Technologies to the Ministry of Higher Education and Research, Paris and was a key speaker at the Conference.

7. From William Renwick, "The Future of Face-to-Face and Distance Teaching in Post-Secondary Education", in OECD 1994, "The Future of Post-Secondary and the Role of Information and Communications Technology: A Clarifying Report", CERI/LBS(94)5 (Conference Document).

8. Janet Jenkins, "Technology-Assisted Distance Learning in Post-Secondary Education : State of the Art in OECD Countries", OECD 1994: CERI/LBS(94)6 (Conference Document).

9. For a thorough analysis based on an expert committee report to the Danish Ministry of Education, see "Technology-supported learning (Distance Learning)", Report no. 1253, Ministry of Education, Copenhagen, 1993.

10. From Stephen C. Ehrmann, "Responding to the triple challenge facing post-secondary education: accessibility, quality, costs" in OECD 1994, "The Future of Post-Secondary Education and the Role of Information and Communication Technology: A Clarifying Report", CERI/LBS(95)5 (Conference Document).

11. From Stephen C. Ehrmann, *ibid*.

12. Extracted from John Mallea, "The Views and Activities of Stakeholders in the Internationalisation of Higher Education", CERI/LBS(94)8 (Conference Document).

13. *Schools and Business: A new Partnership*, OECD, Paris, 1992.

14. Julie Carr is Chief Executive Officer of the Open Learning Technology Corporation. She participated from Canberra to the videoconference organised on 14 December 1994.

15. Scott MacDonald is Director of Research, Time Warner Inc., New York, United States and was a key speaker at the Conference.

16. Linda Roberts is Special Advisor on Education and Technology, U.S Department of Education, Washington D.C. and was a key speaker at the Conference.

17. A full discussion of the themes covered in this CERI study and its relationship to preceding work can be found in "Lifelong Learning -- From Ideal to Reality", CERI/LBS(94)4 (Conference Document).

18. *High-quality Education and Training for All*, Chapter 3, OECD, Paris, 1992.

19. At Makes Workers Learn: The Role of Incentives in Workplace Education and Training, National Center on Adult Literacy, Philadelphia, 1993.

20. *City Strategies for Lifelong Learning*, City of Gothenburg Education Committee, 1993.

21. Lifelong Learning: From Ideal to Reality, CERI/LBS(94)4 (Conference Document).

22. "The Views and Activities of Stakeholders on the Internationalisation of Higher Education", CERI/LBS(94)8 (Conference Document).

23. "Distance Learning and the Internationalisation of Higher Education", CERI/LBS(94)7 (Conference Document).

24. An overview is presented by Janet Jenkins, in "Distance Learning Assisted by Technology: State of the Art in Post-Secondary Education in OECD Countries", CERI/LBS(94)4 (Conference Document).

25. The three working groups reports are brought together in "The Future of Post-Secondary Education and the Role of Information and Communication Technology: A Clarifying Report", CERI/LBS(94)5 (Conference Document).

MAIN SALES OUTLETS OF OECD PUBLICATIONS
PRINCIPAUX POINTS DE VENTE DES PUBLICATIONS DE L'OCDE

ARGENTINA – ARGENTINE
Carlos Hirsch S.R.L.
Galería Güemes, Florida 165, 4° Piso
1333 Buenos Aires Tel. (1) 331.1787 y 331.2391
Telefax: (1) 331.1787

AUSTRALIA – AUSTRALIE
D.A. Information Services
648 Whitehorse Road, P.O.B 163
Mitcham, Victoria 3132 Tel. (03) 873.4411
Telefax: (03) 873.5679

AUSTRIA – AUTRICHE
Gerold & Co.
Graben 31
Wien I Tel. (0222) 533.50.14
Telefax: (0222) 512.47.31.29

BELGIUM – BELGIQUE
Jean De Lannoy
Avenue du Roi 202
B-1060 Bruxelles Tel. (02) 538.51.69/538.08.41
Telefax: (02) 538.08.41

CANADA
Renouf Publishing Company Ltd.
1294 Algoma Road
Ottawa, ON K1B 3W8 Tel. (613) 741.4333
Telefax: (613) 741.5439
Stores:
61 Sparks Street
Ottawa, ON K1P 5R1 Tel. (613) 238.8985
211 Yonge Street
Toronto, ON M5B 1M4 Tel. (416) 363.3171
Telefax: (416)363.59.63

Les Éditions La Liberté Inc.
3020 Chemin Sainte-Foy
Sainte-Foy, PQ G1X 3V6 Tel. (418) 658.3763
Telefax: (418) 658.3763

Federal Publications Inc.
165 University Avenue, Suite 701
Toronto, ON M5H 3B8 Tel. (416) 860.1611
Telefax: (416) 860.1608

Les Publications Fédérales
1185 Université
Montréal, QC H3B 3A7 Tel. (514) 954.1633
Telefax: (514) 954.1635

CHINA – CHINE
China National Publications Import
Export Corporation (CNPIEC)
16 Gongti E. Road, Chaoyang District
P.O. Box 88 or 50
Beijing 100704 PR Tel. (01) 506.6688
Telefax: (01) 506.3101

CHINESE TAIPEI – TAIPEI CHINOIS
Good Faith Worldwide Int'l. Co. Ltd.
9th Floor, No. 118, Sec. 2
Chung Hsiao E. Road
Taipei Tel. (02) 391.7396/391.7397
Telefax: (02) 394.9176

CZECH REPUBLIC – RÉPUBLIQUE TCHÈQUE
Artia Pegas Press Ltd.
Narodni Trida 25
POB 825
111 21 Praha 1 Tel. 26.65.68
Telefax: 26.20.81

DENMARK – DANEMARK
Munksgaard Book and Subscription Service
35, Nørre Søgade, P.O. Box 2148
DK-1016 København K Tel. (33) 12.85.70
Telefax: (33) 12.93.87

EGYPT – ÉGYPTE
Middle East Observer
41 Sherif Street
Cairo Tel. 392.6919
Telefax: 360-6804

FINLAND – FINLANDE
Akateeminen Kirjakauppa
Keskuskatu 1, P.O. Box 128
00100 Helsinki
Subscription Services/Agence d'abonnements :
P.O. Box 23
00371 Helsinki Tel. (358 0) 12141
Telefax: (358 0) 121.4450

FRANCE
OECD/OCDE
Mail Orders/Commandes par correspondance:
2, rue André-Pascal
75775 Paris Cedex 16 Tel. (33-1) 45.24.82.00
Telefax: (33-1) 49.10.42.76
Telex: 640048 OCDE

Orders via Minitel, France only/
Commandes par Minitel, France exclusivement :
36 15 OCDE

OECD Bookshop/Librairie de l'OCDE :
33, rue Octave-Feuillet
75016 Paris Tel. (33-1) 45.24.81.81
(33-1) 45.24.81.67

Documentation Française
29, quai Voltaire
75007 Paris Tel. 40.15.70.00

Gibert Jeune (Droit-Économie)
6, place Saint-Michel
75006 Paris Tel. 43.25.91.19

Librairie du Commerce International
10, avenue d'Iéna
75016 Paris Tel. 40.73.34.60

Librairie Dunod
Université Paris-Dauphine
Place du Maréchal de Lattre de Tassigny
75016 Paris Tel. (1) 44.05.40.13

Librairie Lavoisier
11, rue Lavoisier
75008 Paris Tel. 42.65.39.95

Librairie L.G.D.J. - Montchrestien
20, rue Soufflot
75005 Paris Tel. 46.33.89.85

Librairie des Sciences Politiques
30, rue Saint-Guillaume
75007 Paris Tel. 45.48.36.02

P.U.F.
49, boulevard Saint-Michel
75005 Paris Tel. 43.25.83.40

Librairie de l'Université
12a, rue Nazareth
13100 Aix-en-Provence Tel. (16) 42.26.18.08

Documentation Française
165, rue Garibaldi
69003 Lyon Tel. (16) 78.63.32.23

Librairie Decitre
29, place Bellecour
69002 Lyon Tel. (16) 72.40.54.54

Librairie Sauramps
Le Triangle
34967 Montpellier Cedex 2 Tel. (16) 67.58.85.15
Tekefax: (16) 67.58.27.36

GERMANY – ALLEMAGNE
OECD Publications and Information Centre
August-Bebel-Allee 6
D-53175 Bonn Tel. (0228) 959.120
Telefax: (0228) 959.12.17

GREECE – GRÈCE
Librairie Kauffmann
Mavrokordatou 9
106 78 Athens Tel. (01) 32.55.321
Telefax: (01) 32.30.320

HONG-KONG
Swindon Book Co. Ltd.
Astoria Bldg. 3F
34 Ashley Road, Tsimshatsui
Kowloon, Hong Kong Tel. 2376.2062
Telefax: 2376.0685

HUNGARY – HONGRIE
Euro Info Service
Margitsziget, Európa Ház
1138 Budapest Tel. (1) 111.62.16
Telefax: (1) 111.60.61

ICELAND – ISLANDE
Mál Mog Menning
Laugavegi 18, Pósthólf 392
121 Reykjavik Tel. (1) 552.4240
Telefax: (1) 562.3523

INDIA – INDE
Oxford Book and Stationery Co.
Scindia House
New Delhi 110001 Tel. (11) 331.5896/5308
Telefax: (11) 332.5993
17 Park Street
Calcutta 700016 Tel. 240832

INDONESIA – INDONÉSIE
Pdii-Lipi
P.O. Box 4298
Jakarta 12042 Tel. (21) 573.34.67
Telefax: (21) 573.34.67

IRELAND – IRLANDE
Government Supplies Agency
Publications Section
4/5 Harcourt Road
Dublin 2 Tel. 661.31.11
Telefax: 475.27.60

ISRAEL
Praedicta
5 Shatner Street
P.O. Box 34030
Jerusalem 91430 Tel. (2) 52.84.90/1/2
Telefax: (2) 52.84.93

R.O.Y. International
P.O. Box 13056
Tel Aviv 61130 Tel. (3) 49.61.08
Telefax: (3) 544.60.39

Palestinian Authority/Middle East:
INDEX Information Services
P.O.B. 19502
Jerusalem Tel. (2) 27.12.19
Telefax: (2) 27.16.34

ITALY – ITALIE
Libreria Commissionaria Sansoni
Via Duca di Calabria 1/1
50125 Firenze Tel. (055) 64.54.15
Telefax: (055) 64.12.57

Via Bartolini 29
20155 Milano Tel. (02) 36.50.83

Editrice e Libreria Herder
Piazza Montecitorio 120
00186 Roma Tel. 679.46.28
Telefax: 678.47.51

Libreria Hoepli
Via Hoepli 5
20121 Milano Tel. (02) 86.54.46
Telefax: (02) 805.28.86

Libreria Scientifica
Dott. Lucio de Biasio 'Aeiou'
Via Coronelli, 6
20146 Milano Tel. (02) 48.95.45.52
Telefax: (02) 48.95.45.48

JAPAN – JAPON
OECD Publications and Information Centre
Landic Akasaka Building
2-3-4 Akasaka, Minato-ku
Tokyo 107 Tel. (81.3) 3586.2016
Telefax: (81.3) 3584.7929

KOREA – CORÉE
Kyobo Book Centre Co. Ltd.
P.O. Box 1658, Kwang Hwa Moon
Seoul Tel. 730.78.91
Telefax: 735.00.30

BEST COPY AVAILABLE

MALAYSIA – MALAISIE
University of Malaya Bookshop
University of Malaya
P.O. Box 1127, Jalan Pantai Baru
59700 Kuala Lumpur
Malaysia
Tel. 756.5000/756.5425
Telefax: 756.3246

MEXICO – MEXIQUE
Revistas y Periodicos Internacionales S.A. de C.V.
Florencia 57 - 1004
Mexico, D.F. 06600
Tel. 207.81.00
Telefax: 208.39.79

NETHERLANDS – PAYS-BAS
SDU Uitgeverij Plantijnstraat
Externe Fondsen
Postbus 20014
2500 EA's-Gravenhage
Tel. (070) 37.89.880
Voor bestellingen:
Telefax: (070) 34.75.778

NEW ZEALAND
NOUVELLE-ZÉLANDE
Legislation Services
P.O. Box 12418
Thorndon, Wellington
Tel. (04) 496.5652
Telefax: (04) 496.5698

NORWAY – NORVÈGE
Narvesen Info Center - NIC
Bertrand Narvesens vei 2
P.O. Box 6125 Etterstad
0602 Oslo 6
Tel. (022) 57.33.00
Telefax: (022) 68.19.01

PAKISTAN
Mirza Book Agency
65 Shahrah Quaid-E-Azam
Lahore 54000
Tel. (42) 353.601
Telefax: (42) 231.730

PHILIPPINE – PHILIPPINES
International Book Center
5th Floor, Filipinas Life Bldg.
Ayala Avenue
Metro Manila
Tel. 81.96.76
Telex 23312 RHP PH

PORTUGAL
Livraria Portugal
Rua do Carmo 70-74
Apart. 2681
1200 Lisboa
Tel. (01) 347.49.82/5
Telefax: (01) 347.02.64

SINGAPORE – SINGAPOUR
Gower Asia Pacific Pte Ltd.
Golden Wheel Building
41, Kallang Pudding Road, No. 04-03
Singapore 1334
Tel. 741.5166
Telefax: 742.9356

SPAIN – ESPAGNE
Mundi-Prensa Libros S.A.
Castelló 37, Apartado 1223
Madrid 28001
Tel. (91) 431.33.99
Telefax: (91) 575.39.98

Libreria Internacional AEDOS
Consejo de Ciento 391
08009 – Barcelona
Tel. (93) 488.30.09
Telefax: (93) 487.76.59

Llibreria de la Generalitat
Palau Moja
Rambla dels Estudis, 118
08002 – Barcelona
(Subscripcions) Tel. (93) 318.80.12
(Publicacions) Tel. (93) 302.67.23
Telefax: (93) 412.18.54

SRI LANKA
Centre for Policy Research
c/o Colombo Agencies Ltd.
No. 300-304, Galle Road
Colombo 3
Tel. (1) 574240, 573551-2
Telefax: (1) 575394, 510711

SWEDEN – SUÈDE
Fritzes Customer Service
S-106 47 Stockholm
Tel. (08) 690.90.90
Telefax: (08) 20.50.21

Subscription Agency/Agence d'abonnements :
Wennergren-Williams Info AB
P.O. Box 1305
171 25 Solna
Tel. (08) 705.97.50
Telefax: (08) 27.00.71

SWITZERLAND – SUISSE
Maditec S.A. (Books and Periodicals - Livres et périodiques)
Chemin des Palettes 4
Case postale 266
1020 Renens VD 1
Tel. (021) 635.08.65
Telefax: (021) 635.07.80

Librairie Payot S.A.
4, place Pépinet
CP 3212
1002 Lausanne
Tel. (021) 341.33.47
Telefax: (021) 341.33.45

Librairie Unilivres
6, rue de Candolle
1205 Genève
Tel. (022) 320.26.23
Telefax: (022) 329.73.18

Subscription Agency/Agence d'abonnements :
Dynapresse Marketing S.A.
38 avenue Vibert
1227 Carouge
Tel. (022) 308.07.89
Telefax: (022) 308.07.99

See also – Voir aussi :
OECD Publications and Information Centre
August-Bebel-Allee 6
D-53175 Bonn (Germany)
Tel. (0228) 959.120
Telefax: (0228) 959.12.17

THAILAND – THAÏLANDE
Suksit Siam Co. Ltd.
113, 115 Fuang Nakhon Rd.
Opp. Wat Rajbopith
Bangkok 10200
Tel. (662) 225.9531/2
Telefax: (662) 222.5188

TURKEY – TURQUIE
Kültür Yayinlari Is-Türk Ltd. Sti.
Atatürk Bulvari No. 191/Kat 13
Kavaklidere/Ankara
Tel. 428.11.40 Ext. 2458
Dolmabahce Cad. No. 29
Besiktas/Istanbul
Tel. 260.71.88
Telex: 43482B

UNITED KINGDOM – ROYAUME-UNI
HMSO
Gen. enquiries
Tel. (071) 873 0011
Postal orders only:
P.O. Box 276, London SW8 5DT
Personal Callers HMSO Bookshop
49 High Holborn, London WC1V 6HB
Telefax: (071) 873 8200
Branches at: Belfast, Birmingham, Bristol, Edinburgh, Manchester

UNITED STATES – ÉTATS-UNIS
OECD Publications and Information Center
2001 L Street N.W., Suite 650
Washington, D.C. 20036-4910
Tel. (202) 785.6323
Telefax: (202) 785.0350

VENEZUELA
Libreria del Este
Avda F. Miranda 52, Aptdo. 60337
Edificio Galipán
Caracas 106
Tel. 951.1705/951.2307/951.1297
Telegram: Libreste Caracas

Subscription to OECD periodicals may also be placed through main subscription agencies.

Les abonnements aux publications périodiques de l'OCDE peuvent être souscrits auprès des principales agences d'abonnement.

Orders and inquiries from countries where Distributors have not yet been appointed should be sent to: OECD Publications Service, 2 rue André-Pascal, 75775 Paris Cedex 16, France.

Les commandes provenant de pays où l'OCDE n'a pas encore désigné de distributeur peuvent être adressées à : OCDE, Service des Publications, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

5-1995

OECD PUBLICATIONS, 2 rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(96 95 09 1) ISBN 92-64-14529-X - No. 48049 1995

LEARNING BEYOND SCHOOLING

NEW FORMS OF SUPPLY AND NEW DEMANDS

How can advanced democracies, at the close of the 20th century, make knowledge and learning central to social and economic activity? The question is important for future prosperity. Traditionally, learning has been centred around schools and classrooms. Today, it must extend to everyone, everywhere.

New communication and information technologies offer an unprecedented opportunity to extend learning beyond traditional barriers of age, time and place. This publication considers how the supply of learning opportunities can be better matched to a growing and increasingly diverse pattern of demand, particularly through productive partnerships among institutions, governments and employers.

(96 95 09 1) CX
ISBN 92-64-14529-X

58